

# Farm Chemicals

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BIG DAVE SAYS,

If you're on  
the fence about  
superphosphates  
buy

**DAVISON**

**GTS\***

**\*DAVISON  
Granulated Triple  
Superphosphate**

**EASY TO HANDLE**—Because of its uniform particle size it spreads evenly and uniformly and is perfect for direct applications. Does not deteriorate in handling, packaging or storage.

**IDEAL FOR FORMULATIONS**—Because it is easy to blend. Excellent for alkaline goods and especially recommended for O-25-25.

**HIGH IN  $P_2O_5$  CONTENT**—Because it is constant in analysis its guaranteed minimum is 45% A.P.A.

**UNEXCELLED QUALITY**—Because of Davison's more than century of experience in fertilizer formulation DAVISON Granulated Triple Superphosphate is the standard by which all other granulated products are compared. It is guaranteed to satisfy you on every count.

**"TRIPLE" IN SERVICE AND DELIVERY TOO**—You get DAVISON GTS *when* you want it, *where* you want it, the *way* you want it.

**D**  
Progress Through Chemistry

**DAVISON CHEMICAL COMPANY**

Division of W. R. Grace & Co.  
Baltimore 3, Maryland



Producers of: Catalysts, Inorganic Acids, Superphosphates, Triple Superphosphates, Phosphate Rock, Silica Gels, Silicofluorides, Rare Earths and Thorium. Sole Producers of DAVCO® Granulated Fertilizers.

## HEPTACHLOR CONTROLS FORAGE INSECTS WITHOUT CONTAMINATING MILK!

This year, Heptachlor will be used more extensively than ever for forage insect control, because Heptachlor provides effective control of forage insects without contaminating milk. Tolerance for the use of Heptachlor on forage crops has been established under the Miller Bill, and confirmed by extensive tests. Among these tests was a special study made by the USDA, in which dairy cattle were fed alfalfa treated with Heptachlor at recommended dosages. Chemical analysis showed no trace of Heptachlor in milk from the test cattle. Because Heptachlor is such an effective insecticide, minimum amounts have residual effectiveness, and yet are safe for use on crops fed to animals.

## HEPTACHLOR KILLS THESE FORAGE INSECTS AND MANY OTHERS!

Grasshoppers, alfalfa weevils, spittlebugs, leafhoppers, sweet clover weevils, cutworms, lygus bugs, armyworms, harvester ants, plant bugs, Egyptian alfalfa weevils.

## MORE HEPTACHLOR SALES PROMOTION

Heptachlor sales promotion will be bigger than ever before, too! There will be more farm paper and newspaper advertising, more dealer promotional material, more direct mail, literature, and publicity.

### HEPTACHLOR FORMULATORS!

Mail coupon  
now for  
samples of  
Heptachlor  
materials  
to be used in  
Forage Insect  
Promotions!

# VELSICOL

### CHEMICAL CORPORATION

330 East Grand Avenue  
Chicago 11, Illinois

Please send samples of 1957 Heptachlor Forage Insect promotion materials.

Name

Company

Address

City  Zone  State

there's a  
hard year ahead  
for hungry  
forage insects...  
because of

# HEPTACHLOR

## News!

Velsicol Chemical  
Corporation  
will have  
Methyl Parathion  
available for the  
coming cotton  
growing season!

# Farm Chemicals

## IN THIS ISSUE

Some people have remarked that with all the road construction going on nowadays we might in the near future be building roads on top of roads. But you can rest easy, because that won't happen during the construction of the new 41,000 mile Federal-State highway system. This system has been on the drawing boards for some time and every step has been planned in detail. The farm chemicals industry has a stake in the venture, almost to the point of where it can determine the eventual success of the system.

Too many times in highway construction little thought has been given to the danger of erosion. This is evident today along some of our major highways. A few states have, however, recognized this problem and are now providing us with a wealth of material—figures and statistics—to prove that we need to do more than just lay the concrete or asphalt.

Modern highway construction necessitates in most cases the removal of the topsoil. This means that vegetative cover must be grown on subsoil which normally lacks the structure and the nutrients that make plants grow. This subsoil must be made ready to hold vegetative cover and therein lies a new market for the fertilizer industry.

On page 42 we explore some of the market prospects in this Road-building Program for the fertilizer industry. Watch next month's issue for the Pesticide Outlook.

## COVER STORY

Grass, trees and shrubs provide not only protection against erosion but intangible benefits in the form of safety, beauty and health. This small section of highway in Maryland is an example of what we can expect in highways when the national program is completed.

PIONEER JOURNAL OF THE INDUSTRY, EST. 1894

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FARM CHEMICALS





This advertisement is part of  
a continuing Monsanto Cam-  
paign to help you sell **LION**  
**AMMONIUM NITRATE.**

\*Trade-mark of Monsanto Chemical Company

## You save money with LION in your fields

**LION BRAND AMMONIUM NITRATE IS MORE ECONOMICAL THAN NITRATE  
OF SODA OR AMMONIUM NITRATE-LIMESTONE CARRIERS**

**FOR LOW-COST NITROGEN,** LION Ammonium Nitrate is the brand. Guaranteed to contain 33.5% nitrogen, LION is...

• **Far more economical** than nitrate of soda, which contains only 16% nitrogen. You get more than *twice as much* of the valuable plant food, nitrogen, in every bag of LION brand Ammonium Nitrate than you do in any bag of nitrate of soda.

• **A better buy** than 20.5% ammonium nitrate-limestone carriers, LION gives you *better than 50%* more nitrogen in every bag.

**FOR EASIER SPREADING,** Lion Ammonium Nitrate is in pellet form. These pellets are specially coated to withstand caking... then packed in specially lined, moisture-resistant bags. Result: LION brand is *guaranteed to flow freely—not for just a*

*year, but until used*—when you follow storage directions on the bag.

### 3 EASY STEPS TO GET ALL THE FEEDING-POWER YOUR CROPS NEED

**1. TEST YOUR SOIL** to see what kinds and amounts of fertilizers are needed. Your local farm authorities will help.

**2. ORDER WHAT YOU NEED** of mixed fertilizer and Lion brand Ammonium Nitrate from your fertilizer dealer. When you buy LION, you get top-quality, low-cost nitrogen fertilizer *guaranteed to flow freely; guaranteed to contain 33.5% nitrogen.*

**3. APPLY THE FULL AMOUNT** of mixed fertilizer and Lion brand Ammonium Nitrate soil tests indicate. Don't skimp—fertilizer is the least expensive item you use for crop production.

### GROW MORE PROFITABLY...

Weed Killers • Brush Killers • Parathion Insecticides • Meta-Green® to keep silage fresh • Phosphates (liquid and solid) • LION Sulphate of Ammonia • Anhydrous Ammonia.



MONSANTO CHEMICAL COMPANY • Inorganic Chemicals Division • St. Louis 1, Mo.

May, 1957

## FARM CHEMICALS

### Business & Management

#### NEW HERBICIDE UNIT FOR DUPONT COMPANY

DuPont Co. will build a new production unit to manufacture sulfamic acid and "Ammate" weed and brush killers on the site of its present plant at East Chicago, Ind., that firm recently announced.

"The new unit will double the company's production of these two important products and will provide an adequate supply to meet future needs of our customers," said Clark W. Davis, general manager of the Grasselli Chemicals Dept.

Construction of the unit is being handled by the company's Engineering Department and it is expected that operations will begin in 1957.

#### METHYL PARATHION ADDED TO SHELL LINE

Shell Chemical Corp. plans to complete this month its new Denver unit to produce methyl parathion. F. W. Hatch, manager

of the Agricultural Chemical Sales Div., said the firm is adding this phosphorus-based insecticide to its line primarily to help fight boll weevil infestations in southern cotton crops.

Methyl parathion in combination with endrin has proved particularly effective in combating cotton boll weevils that have become resistant to many of the controls previously used, Shell reports.

While methyl parathion is highly toxic to man and animals, Hatch said, it can be used safely and effectively if the company's safety precautions are followed.

#### MEDICAL EDUCATION AIDED BY INDUSTRY

Sixty-seven chemicals firms in 1956 contributed \$123,930 to the Nation's 82 medical schools through the National Fund for Medical Education. Total contributions from business and industry reached \$1,862,016, compared with \$1,693,048 in 1955.

#### PREDICT FINE YEAR FOR NH<sub>3</sub> SALES

The Agricultural Ammonia Industry appears to be headed into one of its finest years of sales, members of the board of directors of the Agricultural Ammonia Institute were told at their annual spring meeting in Memphis.

Early reports on 1957 distribution indicated sales were running as high as 30 per cent above the same period a year ago. Optimistic reports involved the sales of anhydrous ammonia for direct application to the soil in such states as Texas, California, Louisiana, Mississippi, Arkansas, Missouri, Illinois and Georgia.

#### OM SALES & EARNINGS REACH RECORD HIGH

Consolidated net sales of Olin Mathieson Chemical Corp. in the U. S. and Canada increased by 6.5 per cent in 1956 to a record high of \$596,673,005, John M. Olin, chairman, and Thomas S. Nichols, president, announced recently in the firm's annual report.

Net income increased from \$44,558,102 in 1955 to \$44,791,071 in 1956.

The report noted that the company increased its net income in spite of reduced profits on agricultural chemicals, reduced sales of brass and brass products, and a prolonged strike, settled in January, at the sodium phosphates plant at Joliet, Ill.

#### PANOGEN AND LARVACIDE PRODUCTS JOIN FORCES

A joint announcement by Petrus Hellman, president of Panogen, Inc., and Conrad C. Johnson, president of Larvacide Products, Inc., reveals that the two companies are joining forces as a result of the Panogen group acquiring the stock of Larvacide Products, Inc.

Larvacide will continue to operate as a separate company under the management of Johnson. Richard P. Porter remains with Larvacide as vice president in charge of sales.

Larvacide will move its headquarters from New York to Ringwood, Illinois.

#### DAVISON'S NEW FLA. PHOSPHATE OFFICE

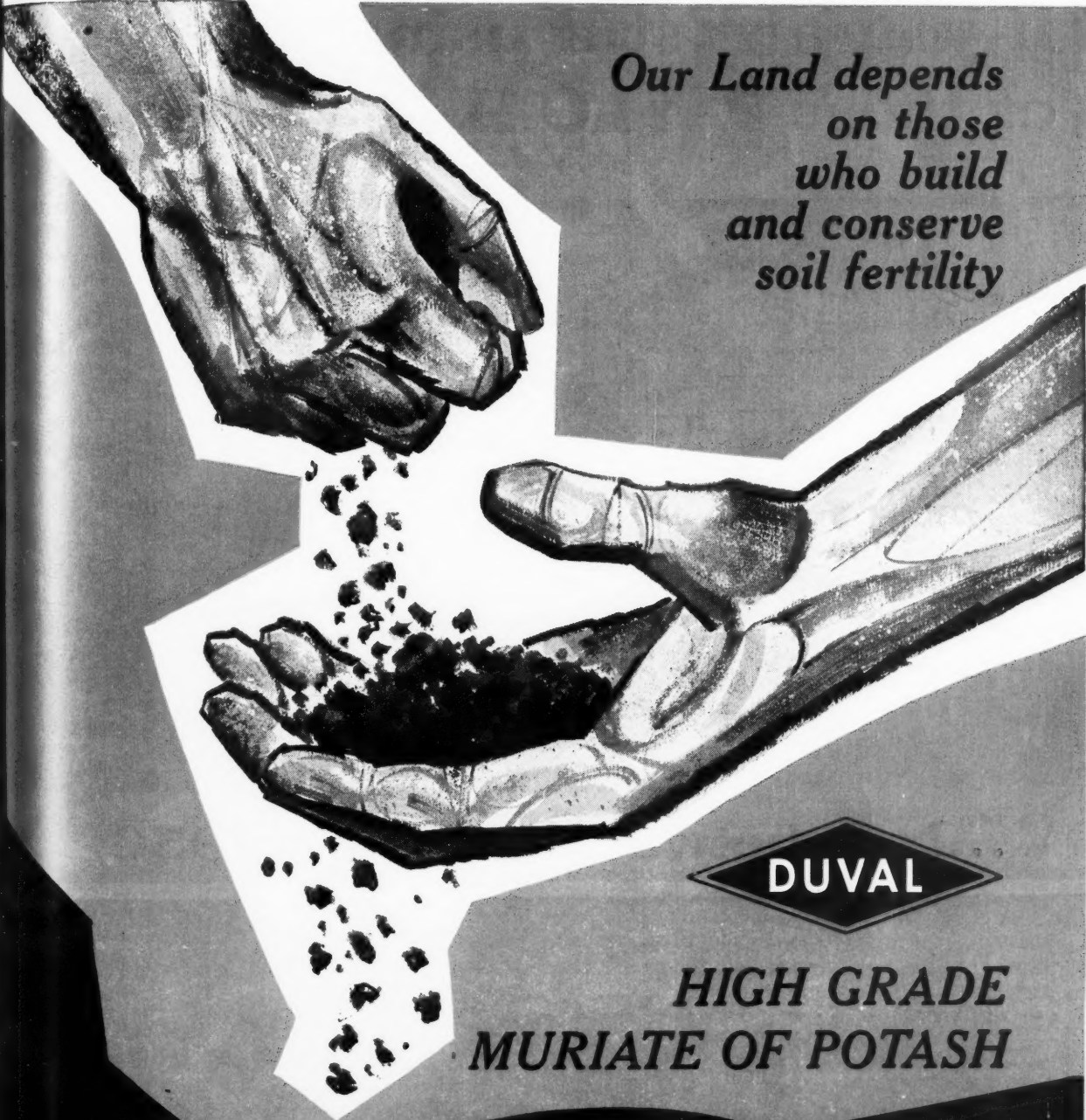


This new office building at Bartow, Fla., of the Florida Phosphate Div., Davison Chemical Co. Div. of W. R. Grace & Co. now houses the 65 administrative, office and engineering personnel of the division. It is about 170 feet x 70 feet, with 10,500 sq. ft. of floor space.









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on those  
who build  
and conserve  
soil fertility*

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**HIGH GRADE  
MURIATE OF POTASH**

*will help do the job!*

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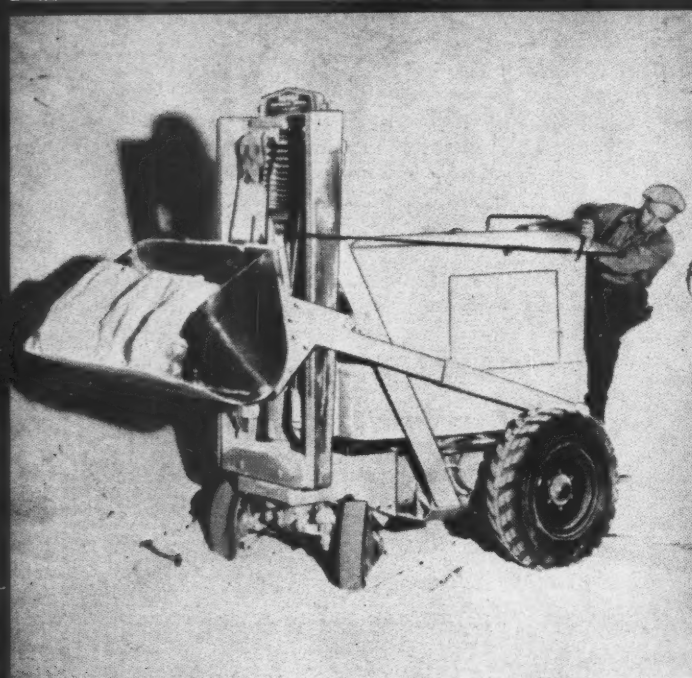
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and  
POTASH CO.**

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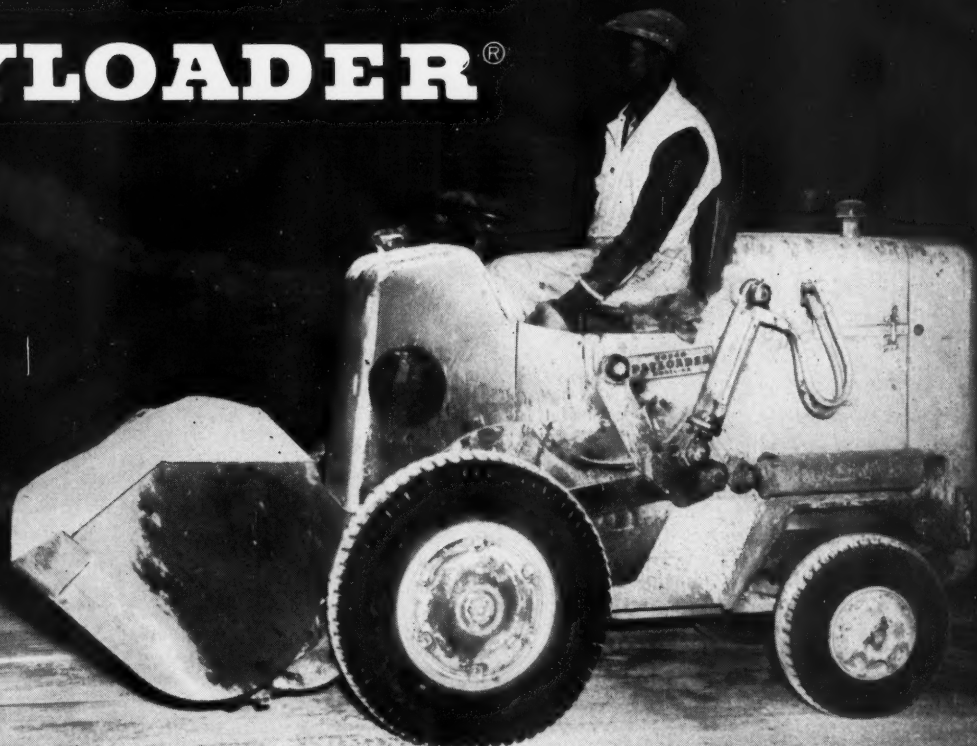
...built between 1940 and 1956



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# It will pay to trade for this new style **PAYLOADER®**



## ...handle up to 100% more

Long-time users of "PAYLOADER" tractor-shovels report that the new style model HA "PAYLOADER" does up to 100% more work than the last previous model and outperforms all other comparable sizes of tractor-shovels including some bigger, heavier machines.

Many advanced design features contribute to the outstanding superiority of the new HA — the distinctive bucket motion with 40° tip-back break-out action at ground level — the hydraulic load-shock absorber that permits higher travel speeds and reduces spillage — the exclusive one-lever bucket control that simplifies and speeds operating cycles. These are only a few of the reasons why the new style model HA makes your operators more productive — why they can dig more, carry more and deliver more tonnage at lower cost.

**WANT PROOF?** If you are using a "PAYLOADER" that is more than 2 years old, ask your "PAYLOADER" Distributor for a demonstration of the latest model and see how much more work your operator can turn out — and how much more than with any comparable size machine. Call him today.

Shortest turning radius  
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Hydraulic load-shock absorber  
40° bucket tip-back at ground level  
Exclusive one-lever bucket control

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704 Sunnyside Ave., Libertyville, Ill.

Send full data on "PAYLOADER" tractor-shovels as follows:

☐ Front-wheel-drive models HA (18 cu. ft.) and HAH (1 cu. yd.)

☐ Larger models including 4-wheel-drives up to 2¼ cu. yd.

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Title

Company

Street

City  State



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MANUFACTURED BY

**THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.**

SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY





**C&I-CLOPAY MERGER OFF**

The Chemical and Industrial Corp. of Cincinnati has just announced that the tentative plans for a merger with Clopay Corp., which had been reported in the press in February, have been dropped and negotiations in connection with the merger definitely have been terminated.

C&I said it will continue its normal business, with no changes contemplated in the corporate set-up or business of the company.

**OM RECOVERS FLUORIDE FROM  $P_2O_5$  AT PASADENA**

A new sodium silico fluoride plant, built at a cost of more than three-quarters of a million dollars, is now in full production at Pasadena, Tex., S. L. Nevins, vice president of Olin Mathieson Chemical Corp., has announced.

Adjoining the high analysis Ammo-Phos fertilizer plant of the Plant Food Div., the new unit recovers fluorides from phosphoric acid manufactured there.

**CCC LE MOYNE PLANT BEGINS OPERATIONS**

Consolidated Chemical Industries, a division of Stauffer Chemical Co., in March began operating a new sulfuric acid plant near Mobile at Le Moyne, Ala. Of the contact type, the plant has a capacity of 500 tons per day.

Located on main water, rail and highway outlets, the plant will furnish sulfuric acid in all strengths via tank car, tank truck and barge.

**N. DIV. ESTABLISHES MEMPHIS BRANCH OFFICE**

A branch office was opened last month in Memphis, Tenn., by Nitrogen Div., Allied Chemical & Dye Corp. headed by Sales Supervisor Jack F. Dulaney.

The new office, located at Southgate Office Plaza, 1929-B South 3rd St., serves Tennessee, Louisiana, Mississippi, Arkansas, Oklahoma, Texas and New Mexico.

**POLIO SHOTS FOR ROBERTSON WORKERS**

Fertilizer manufacturing was stopped at the South Norfolk plant of Robertson Chemical Corp. on March 15 so that employees could receive their first polio vaccine inoculations in a company-sponsored program.

Company physician E. Ray Altizer and his nurse, Miss Sarah



Saunders, administered the vaccine to personnel 40 years of age and under. The second inoculations were scheduled for mid-April with the last to follow in seven months.

**FORM GLENN CHEMICAL**

Glenn Chemical Co. recently announced its organization to manufacture an insect repellent trademarked Tabutrex. Offices are at 2735 North Ashland Avenue, Chicago.

**NPFI COUNSEL CONNER TESTIFIES AGAINST S. 11**

Testifying recently in opposition to enactment of S. 11 before the Antitrust and Monopoly Subcommittee of the Senate Committee on the Judiciary, John D. Conner, general counsel for the National Plant Food Institute, said that "there are no practices presently used in the distribution of fertilizer which warrant the passage of the proposed legisla-

tion." He emphasized that there is no justification for this Congress to now deprive a seller of the "vital right to meet competition or to so severely restrict it that it loses its significance."

Conner said that S. 11, a bill to amend the Robinson-Patman Act, in effect, would severely restrict the right of a manufacturer to meet an equally low price of a competitor.

"The proposed legislation would jeopardize some of the present marketing practices upon which the sale of fertilizer and fertilizer materials are dependent," the counsel said.

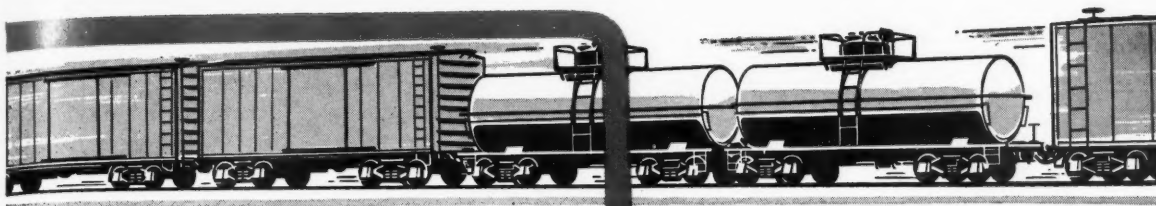
"There has never been a proceeding in the fertilizer industry based upon a violation of the Robinson-Patman Act, in so far as we have been able to determine. We know of no facts to support an inference that there are at present predatory competitive practices which are being masked by the 'right to competition' proviso. To the contrary, we believe this right to meet competition gives to the fertilizer manufacturer the right to compete for the market in the largest geographical area within which he can market and make a profit."

Conner pointed out that there are sound reasons to believe that the farmer benefits from this vigorous competition. He noted that fertilizer prices are now only 150 per cent of what they were during the 1909-14 base period, compared with 290 per cent of the base period for other commodities purchased by farmers.

"This right to meet competition is an integral part of the marketing of fertilizers," Conner continued. "It is essential that it remain a part of this system, particularly because of the changing conditions resulting from the soil bank program. There is no evidence of its misuse in the fertilizer industry. If it should be, there are believed to be adequate means under the present Robinson-Patman Act to correct any such misuse. On the other hand, there are sound reasons for feeling that the proposed legislation would jeopardize some of the present practices which are a vital part of our distribution system."







The premium fertilizer  
materials you want...  
on the way to you

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For Fast Delivery  
Look To Phillips 66  
*PRODUCERS OF*

AMMONIUM SULFATE  
ANHYDROUS AMMONIA  
NITROGEN SOLUTIONS  
AMMONIUM NITRATE  
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*On Time Delivery* of Phillips 66 fertilizer materials for  
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So for dependable, assured supplies of the high quality products you want . . . WHEN YOU WANT THEM . . . see your Phillips 66 representative today. He will be glad to give you the benefit of Phillips technical service and counseling backed by years of experience.



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BARTLESVILLE, OKLA.—Adams Bldg.  
CHICAGO, ILL.—7 South Dearborn St.  
DENVER, COLO.—1375 Kearney Ave.  
DES MOINES, IOWA—606 Hubbell Bldg.

HOUSTON, TEX.—1020 E. Holcombe Blvd.  
INDIANAPOLIS, IND.—1112 N. Pennsylvania St.  
KANSAS CITY, MO.—500 West 39th St.  
MINNEAPOLIS, MINN.—212 Sixth St. South  
NEW YORK, N. Y.—80 Broadway  
OMAHA, NEB.—WOW Building  
PASADENA, CALIF.—330 Security Bldg.

RALEIGH, N. C.—804 St. Mary's St.  
SALT LAKE CITY, UTAH—68 South Main St.  
SPOKANE, WASH.—521 E. Sprague  
ST. LOUIS, MO.—4251 Lindell Blvd.  
TAMPA, FLA.—3737 Neptune St.  
TULSA, OKLA.—1708 Ulica Square  
WICHITA, KAN.—501 KFH Building

**NEW LIQUID FERT.  
PLANT FOR Rn'S CO.**

Rn'S Fertilizer Co. of Akron, Mich. has started operation of its liquid fertilizer plant, designed by J. C. Carlile Corp.

Production is at the rate of about 20 tons per hour, and during peak seasons, the plant is expected to run 10 to 12 hours per day.

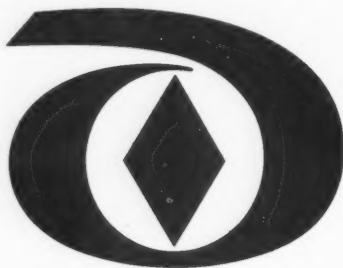
Harry Rohlf and Stanley Smith are the owners and Bill Anderson, plant manager.

**CHEMICALS GROUP OF  
ARBA TO MEET MAY 21**

People who are interested in the application of herbicides, pesticides, plant hormones, growth control chemicals, etc. on highway rights-of-way have been invited to attend the May 21 meeting of the Subcommittee on

Chemicals of the Committee on Roadside Construction and Maintenance, American Roadbuilders Association. The meeting will be held in the ARBA offices in Washington, D. C. at 9:30 a.m.

For further information, write C. O. Eddy, chairman of the Subcommittee, Niagara Chemical Division, Middleport, New York, or Dr. J. W. Zukel, Naugatuck Chemical Div., Bethany 15, Conn.

**DIAMOND ALK. ADOPTS  
NEW TRADEMARK**

Diamond Alkali Co. has just adopted a new trademark called the "Chemical Diamond." This mark was designed to provide originality and visual recognition

values that will make it an effective aid in product selling, merchandising, advertising and public relations by creating new, instant-identification impact and quality association for the company in the minds of customers, suppliers, stockholders, employees and the public, Diamond reports.

**CHICAGO OFFICE FOR  
U S BORAX & CHEMICAL**

Last month the Agricultural Sales Dept. of United States Borax and Chemical Corp. moved its North Central District Office from Kansas City to 3456 Peterson Ave., Chicago 54, Ill.

**NEW CHARTERS**

Campbell Fertilizer Co., Inc., Gueydan, La. has filed a charter to distribute, retail and wholesale fertilizers. Capital stock is listed at \$15,000.

Hayes-Sammons Chemical Co., Mission, Tex., has been granted a Mississippi permit (charter). The firm is expected to establish and maintain a fertilizer and pesticide business in Miss.

*Escambia Chemical, a Bright, New Name in Nitrogen*

**"BAY-SOL" NITROGEN SOLUTIONS**

**ANHYDROUS AMMONIA**

**AMMO-NITE** AMMONIUM NITRATE FERTILIZER — 33.5% NITROGEN

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Modern, easily accessible manufacturing plant and continuing research.

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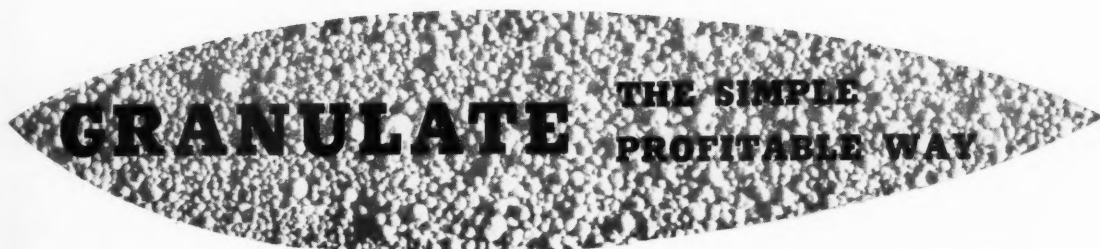
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# GRANULATE In Your Plant With The LEADER



It's a proven fact — there are more Blue Valley Granulators operating in fertilizer plants today, than any other make.

One reason why — Blue Valley engineers originated controlled liquid phase granulation! This means higher quality fertilizer . . . lower operating cost . . . MORE PROFIT FOR YOU!

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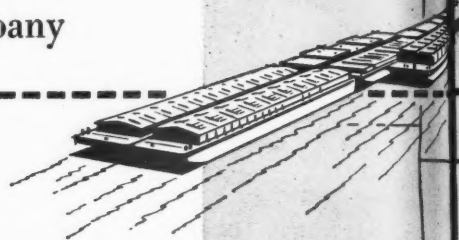


**BLUE VALLEY EQUIP. MFG. & ENGR. CO.**  
**LAURENT & N. TAYLOR**  
**TOPEKA, KAN.**  
**PHONE 4-3441**

**BLUE V GRANULATORS, FERTILIZER PLANT EQUIPMENT, AND COMPLETE FERTILIZER PLANTS**

# "International's water-route pioneering has trimmed our costs!"

Pushing barge shipments of Triple Super up the Mississippi has meant immediate savings at our inland plants, says Ralph Fraser of the Summers Fertilizer Company



*"Our plant men are always glad to see International's Triple come in," says Ass't Plant Superintendent Frank Prenger.*



Mixed goods manufactured in the Summers' plants are sold in 15 northern states under the well-known brand name, "Best-On-Earth".



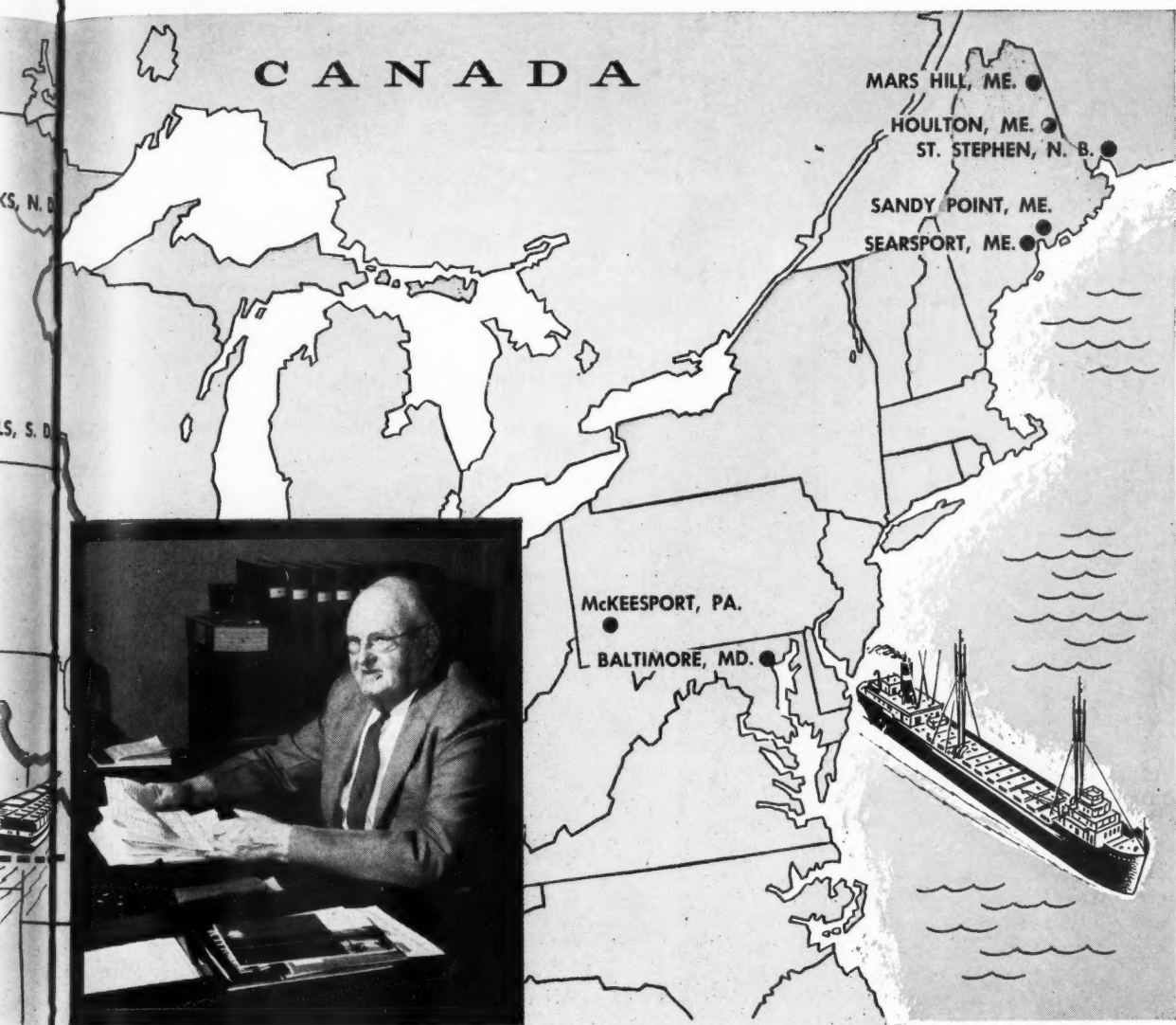
International's natural-curing for a minimum of 5 weeks contributes to excellent physical condition that holds down handling problems.



Prenger checks a new shipment of International Triple. Uniform particle size . . . desirable moisture content mean good ammoniation.

FARM CHEMICALS





"From the Dakotas to Maine, our 9 fertilizer plants meet a lot of different conditions," says Ralph Fraser, vice-president of the Summers Fertilizer Company.

"But one thing sure — in every plant where we use triple super, International's water-routing saves us money."

"That's one of the reasons we welcomed their barge shipments up the Mississippi River. It meant immediate savings at our plants in Grand Forks, N. Dak., and Sioux Falls, S. Dak.," adds Fraser.

"Our East Coast plants, too, rely on International's dependable service, speedy delivery and low shipping costs."

What's more, experience has proved International's Triple arrives in good condition, whether it is shipped

by barge or by rail. "The men in the plant like to handle International's Triple," says Frank Prenger, assistant superintendent of the Baltimore plant. "We think it has the proper moisture content . . . the desirable physical condition that gives us good ammoniation results."

The Summers Fertilizer Company dates back to 1922 when the Baltimore plant was established. Now the organization includes 9 fertilizer plants and 3 related plants serving a 15-state area.

International's barge shipments, combined with "on-site" warehousing, can help you realize big savings, too. If you are not already an International user, put us to the test. Write or wire for full information on prices, shipping and warehousing arrangements.

## INTERNATIONAL MINERALS & CHEMICAL CORPORATION

PHOSPHATE CHEMICALS DIVISION . . . . . 20 N. WACKER DRIVE, CHICAGO 6

## FARM CHEMICALS

### People

**American Bio-Chemical Laboratory.** J. J. Broening has joined the firm's staff, to head its Industrial Testing Service Div.

**Chase Bag Co.** Appointment of Robert D. Rusch as manager of the paper mill at Chagrin Falls, Ohio, recently was announced. Rusch had been assistant manager of the mill, and before going to Chase was general superintendent in charge of paper making operations at the Mosinee Paper Co.



Rusch

**Connecticut Agr. Experiment Station.** Stephen Collins, a graduate of Cornell University whose advanced degree from Rutgers University was awarded for work in botany, has been appointed to the station's forestry research staff. He will study successional trends in Connecticut woodlands to gain information useful in forest management.

**Columbia-Southern Chemical Corp.** Arthur C. Ellsworth, Jr., has been named special projects engineer. Formerly assistant director of development for the firm's chemical producing plant at Natrium, W. Va., Ellsworth will transfer to C-S Pittsburgh general office's planning department.



Ellsworth

**Commercial Solvents Corp.** appointments: V. Keith Fuller of

Bloomington, Ill., is named to the agricultural chemicals' marketing and distribution organization in the Midwest. His sales responsibilities will be in the states of Illinois and Indiana, with headquarters in the company's St. Louis office.



Fuller

New addition to the agricultural chemicals sales staff is Denzil M. Waller. Assigned to the Southern sales district, Waller will make his headquarters at the company's Sterling, La., office and will reside in Monroe, La.



Waller

**Davidson-Kennedy Associates Co.** has named James E. Iliff as vice-president-general manager. Iliff will direct the Chicago office of the engineer-contractor firm, specializing in the design, procurement of equipment and erection of chemical process plants and facilities.



Iliff

**Diamond Alkali Co.** Lawrence L. Cecil, Jr., has been appointed staff assistant in the Export Sales Dept. At his new post, he will be concerned chiefly with

promotion of agricultural chemicals sales. Cecil goes to Diamond from United States Pipe & Foundry Co., Birmingham, where he was engaged in export sales administration for the past three years.

Edward J. Masek, an attorney since 1952 in the Cleveland Office of the Anti-Trust Div., U. S. Department of Justice, has joined Diamond Alkali in a similar capacity. Masek will work with John A. Wilson, assistant secretary, devote his attention chiefly to general legal matters for the company.

Olin Smith succeeds C. F. Wolters, Jr., who recently retired, as branch manager of Diamond's Philadelphia Branch Sales Office. Robert R. Wood takes over Smith's assignment as assistant branch sales manager at Chicago.

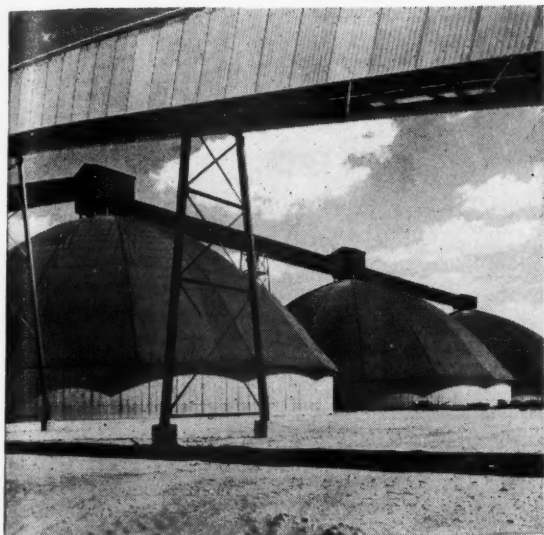
**Du Pont Co.** Walter Dannenbaum retired at the end of March as a vice president and member of the executive committee of Du Pont Co. after a career of nearly 43 years. He retains his position as a member of the board of directors.

**Glenn Chemical Co.** Z. Z. Dworkin has been named manager of sales of the newly organized firm, which manufactures an insect repellent trademarked Tabutrex. Dworkin had been area sales supervisor for Fairfield Chemical Div., Food Machinery and Chemical Corp.

**Hercules Powder Co.** All officers and members of the Executive and Finance committees were re-elected for the ensuing year at the board of directors recent annual meeting. In addition, E. C. Stump III was elected assistant secretary, and Alto J. Smith, assistant treasurer.

**Hooker Electrochemical Co.** J. H. Babcock, vice president, who retires May 1, was honored at a luncheon on March 13, attended by directors, officers and other company friends.

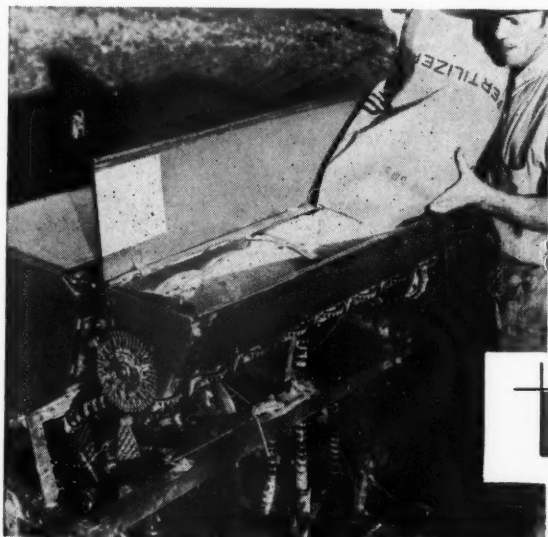
**Magee Cooperative AAL.** M. R. Calder has been named man-



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and  
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NATIONAL POTASH supplies the  
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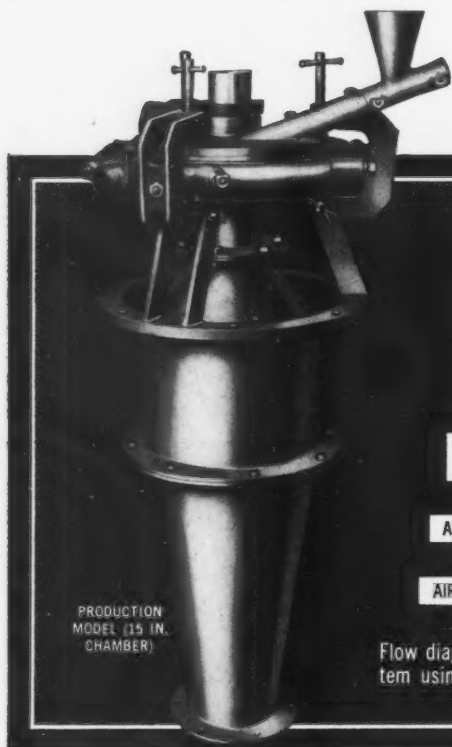
These qualities enable the  
manufacturer to offer a better  
product to the farmer  
for his plant food dollar.



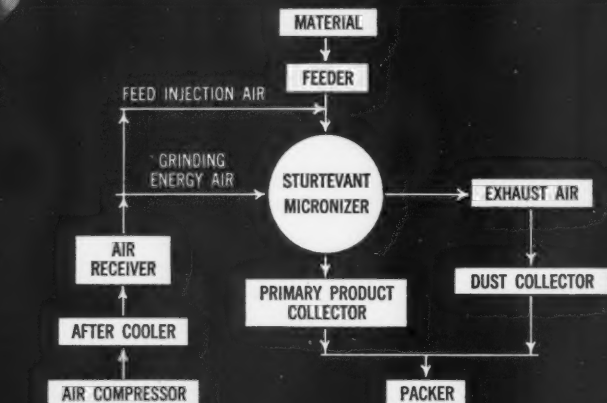
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**POTASH COMPANY**  
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# Need 1/2 to 44 Micron Particles?



**Sturtevant Micronizers\* Reduce, classify in one operation — make 325 mesh obsolete**



Flow diagram of Sturtevant designed micronizing system using compressed air. Steam also may be used.

## Particles Grind Each Other, Classifying is Simultaneous; No Attritional Heat

**One operation.** Sturtevant Micronizers grind and classify in a single fluid-jet chamber — provide fines in range from 1/2 to 44 microns to meet today's increased product fineness requirements. Because of impact action and cool atmosphere, even heat-sensitive materials can be handled.

**No moving parts.** Particles in high speed rotation, propelled by compressed air or steam: entering shallow grinding chamber at angles to periphery grind each other by violent impact. Design provides for instant accessibility, easy cleaning.

**Simultaneous classification.** Centrifugal force keeps over-size materials in the grinding zone, cyclone action in central

section of chamber classifies and collects fines for bagging. Rate of feed and pressure control particle size of fines.

**Can combine other processes.** Sturtevant Micronizers can be adapted for coating one material with another and for effecting chemical reactions and changes in physical characteristics, while in process of reducing solids to micron size.

**Eight models available.** Grinding chambers are in eight sizes, ranging from 2 in. diameter laboratory model (1/2 to 1 lb. per hr. capacity) to large 36 in. diameter production model (500 to 4000 lbs. per hr. capacity). Send today for fully descriptive literature.

### LOWER MICRON MATERIALS SET NEW STANDARDS IN THESE FIELDS:

- Pharmaceuticals
- Pigments (natural and synthetic)
- Copper compounds
- Filler materials
- Aluminum compounds
- Resins
- Flour
- Sugar
- Calcium compounds
- Heat sensitive materials
- Magnesium compounds
- Zinc compounds
- Waxes and fatty acids
- Fungicides and insecticides

### Fluid-Jet Systems For Special Needs

A 30 in. Sturtevant Micronizer is reducing titanium dioxide to particle size under 1 micron at a feed rate of 2250 lbs. per hr. For another firm, a 24 in. model grinds 50% DDT to 3.5 average microns at a solid feed rate of 1200 to 1400 lbs. per hr. A pharmaceutical house is using an 8 in. model to produce procaine-penicillin fines in the 5 to 20 micron range. Iron oxide pigment is being reduced by a 30 in. Micronizer to 2 to 3 average microns at rates of 1000 lbs. per hr. Sturtevant Engineers will help you plan a Fluid-Jet system for your ultra-fine grinding and classifying requirements. *Write today.*



#### CAN TEST OR CONTRACT MICRONIZING HELP YOU?

Laboratory test-micronizing of your own material, or production micronizing on contract basis, are part of Sturtevant service. See for yourself the improvement ultra-fine grinding can contribute to your product. Or, if you have limited requirements for ultra-fine grinding, Sturtevant's contract micronizing service may be the economical answer. Write for full details.

\* REGISTERED TRADEMARK OF STURTEVANT MILL CO.

## STURTEVANT

MILL COMPANY 140 Clayton St., Boston 22, Mass.

CRUSHERS • GRINDERS • SEPARATORS • BLENDERS • CONVEYORS • ELEVATORS





## How to cut cake with a cube

**T**AKE a fern-shaped ammonium chloride crystal. Change its form to a cube, and you've cut fertilizer caking and bag-set in a hurry.

In fertilizers, ammonium chloride is formed during the mixing process by reactions between nitrogen materials and potassium chloride.

Ordinarily, it develops into fern-shaped crystals with hundreds of tiny, finger-like projections like those shown at right above. These crystals will cement fertilizer particles into a cake.

But now you can shape those crystals into non-caking cubes — and do it every time — with Sohio gen ammoniation solutions.

Sohio gen solutions 10, 11, 12, and 15 are specially formulated with ammonia, ammonium nitrate and urea. And urea has the ability to transform ammonium chloride crystals into square-edged, free-flowing cubes.

What's more, with these Sohio gen solutions, you finish three jobs at once. You solve costly conditioning problems, complete ammoniation and add supplemental nitrogen to meet grade.

So if caking is one of your problems, call the man from Sohio. He'll be glad to show you how Sohio gen solutions improve your formulation and cut your costs.

*We're serious about service at Sohio*

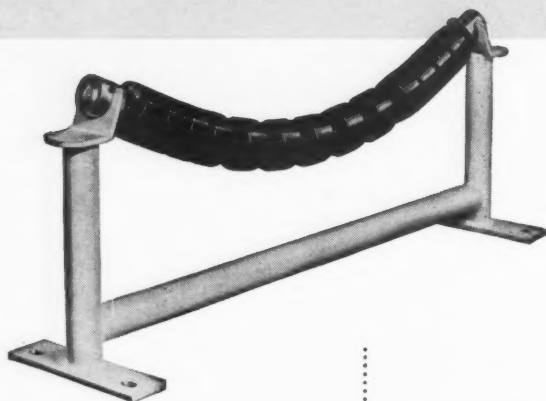


**SOHIO CHEMICAL COMPANY**

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*We've been asked...*

**"WHAT IS THE  
JOY LIMBEROLLER  
BELT CONVEYOR IDLER?"**



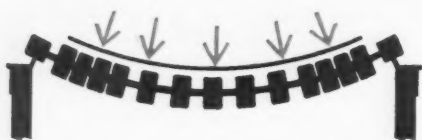
JOY LIMBEROLLER BELT CONVEYOR IDLER



CONVENTIONAL IDLER



Radically different from all other idlers, the Limberoller is a flexible steel cable suspended between two bearings... to which neoprene discs are molded... forming a single roll idler which turns on its own axis. This imparts a flexing action which is self-cleaning... prevents material buildup, a source of trouble with conventional idlers.



Supports the belt throughout its entire width... doesn't have the unsupported gaps left between the rolls like conventional idlers. Increases belt life 20% and more. Materials don't "bump along" from idler to idler, either.



Two bearings, instead of six. They are up out of the dirt zone, not hiding down under the belt. Joy has never replaced a single bearing due to normal failure. Heard enough? There's more... get the whole story from Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa. In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario.



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CONVEYORS • AIR AND GAS COMPRESSORS • FANS • BLOWERS • ROCK DRILLS • BLAST HOLE DRILLS  
HOISTS • ELECTRIC PLUGS, RECEPTACLES AND POWER DISTRIBUTION SYSTEMS

FARM CHEMICALS

People

ager, to fill the vacancy left by the death of B. A. Smith.

**Michigan Chemical Corp.** William P. McDonnell joins the sales staff, with headquarters in New York City. A graduate of Columbia University with a Bachelor degree in Chemistry, McDonnell also completed postgraduate studies in advanced organic and inorganic chemistry and later studied marketing in Columbia University's Graduate School of Business.

**Monsanto Chemical Co.** El-erington Saunders of Everett, Mass., and Dr. Edward J. Griffith of Dayton, O., have been promoted to the position of scientist in the Inorganic Chemicals Div. research department. Dr. John H. Payne, Jr. of Dayton and Dr. Joseph A. Brink, Jr. of Everett were honored with the division's Gaston du Bois awards for outstanding research accomplishments during 1956.

**National Fund for Medical Education, CHEMICAL DIV.** Thomas J. Hargrave, chairman of the board, Eastman Kodak Co., has accepted the chairmanship of the Chemical Div. Among those serving with him are Peter Colefax, pres., American Potash & Chemical Corp.; Paul L. Davies, chairman, Food Mach. & Chem. Corp.; Christian de Guigne III, chairman, Stauffer Chemical Co.; F. J. Emmerich, chairman of board, Allied Chem. & Dye Corp.; Raymond F. Evans, chairman, Diamond Alkali Co.; Joseph Fistere, pres., Mallinckrodt Chemical Works; Gen. J. E. Hull, pres., Manufacturing Chemists' Assn.; Theodore Marvin, pres., Michigan Chem. Corp.; Thomas S. Nichols, pres., Olin Mathieson Chem. Corp.; Charles M. Powell, pres., American Agr. Chem. Co.; Charles Allen Thomas, pres., Monsanto Chemical Co. and Kenneth C. Towe, pres., American Cyanamid Co.

**Naugatuck Chemical Div.,** U. S. Rubber Co. Former Los Angeles district manager Gerald L. Dennis has been appointed manager of field sales for Naugatuck. In his new post he will supervise transition of Naugatuck Chemical's commodity sales organization to a district sales office set up. He will then promote sales of all the chemical division products through this district organization.



Nichols

**Nichols Seed and Fertilizer Co.** Merger of Nichols Seed Co. and Nichols Fertilizer and Chemical Co. of Oklahoma City recently was announced by Earl Nichols, who is president of the combined organization.

John I. Taylor, former president of the Oklahoma Farm Bureau, was named general manager of the merged companies. Taylor is a prominent Oklahoma rancher and agricultural leader who has long been active in state farming and business circles.



Taylor

The Nichols organization began in 1931 as a retail store and now operates four plants in Oklahoma.



Dudley

**Nitrogen Div.,** Allied Chemical & Dye Corp. has named Homer Dudley sales supervisor for direct application materials in the Omaha district, comprising Neb., Iowa, Kans., Colo., Wyo. and Mont. Dudley has been with Nitrogen Div. since 1955 as a sales representative in the Omaha area.

MAY, 1957

**Olin Mathieson Chemical Corp.,** Plant Food Div. Formerly sales manager for anhydrous ammonia, Charles A. Wood of Kingston, Ohio, has been named sales manager, East Central area, for the Northeastern district.



Wood

**Potash Co. of America.** F. H. Kennedy, who has worked out of the Midwestern sales office for the past seven years has been assigned to take over the accounts formerly served by T. E. Bradley. Former sales manager of PCA'S Mid-



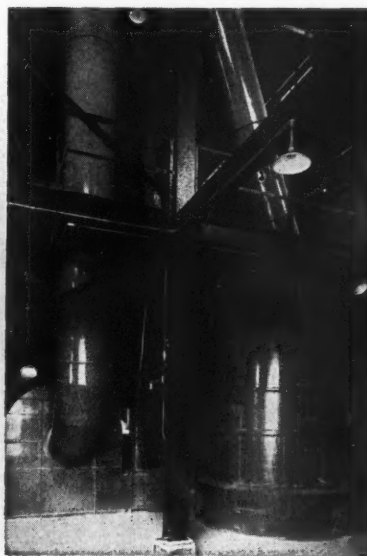
Kennedy

superior grinding equipment since 1891

## BRADLEY PNEUMATIC HERCULES MILL

Provides a uniform grind from 20 to 325 mesh. Floor level installation provides easy accessibility . . . lowest installation and maintenance costs. Durable, non-clogging vibratory feeder for dependable, worry-free operation . . . even on material with some amount of moisture.

*for Fine grinding of limestone phosphate rocks, etc.*



*for Semi-fine grinding of agricultural limestone*

## BRADLEY HERCULES MILL

From rough to finish in one low-cost operation. Automatic electric feed control eliminates manual operation. Rugged, dustless construction, maximum accessibility, keep maintenance costs at an absolute minimum. In sizes to meet any requirements at moderate cost.

For complete information, write for catalogs No 61-62

 **Bradley PULVERIZER CO.**  
LONDON ALLENTOWN, PENNA. BOSTON



## "We see Burlap from both sides of the fence,"

says Cy Yarborough Jr., manager of the Hastings Potato Growers Association, Florida. "As *customers*, our members order their fertilizer in burlap bags because they're easy to handle in the field, they don't break, and they have *resale* value. As *sellers*, we ship potatoes in burlap bags because we know they'll arrive at their destination in good condition. Burlap is made to take scuffling and abuse and it provides good circulation. Our customers ask *us* to ship in burlap."

On your side of the fence isn't burlap easier to handle? Doesn't your fertilizer packed in burlap have more sales appeal?

**Just ask your own customers—  
they'll tell you that burlap**



**Is strong** — takes dragging, dropping, man-handling — any tough job on the farm.



**Gives good ventilation** — keeps farm supplies and products fresh.



**Laughs at sudden showers** — wetness or dampness can't weaken it.



**Saves money** — extra value from re-sale and re-use.



**Saves storage space** — stacks to any height without slipping.



**Has 1000 uses** — always in demand on the farm (popular with farm wives, too!)

## THE BURLAP COUNCIL

of the Indian Jute Mills Association  
155 East 44th Street, New York 17, N. Y.



western Office, Bradley has western Office, Bradley reached retirement age and is no longer on active duty with the firm.

**St. Regis Paper Co.** Election to the St. Regis board of directors of J. Howard Laeri, executive vice president of the First National Bank of New York, has been announced.

**Spencer Chemical Co.** Byron M. Kern has been promoted to general manager of production, Agricultural Chemicals Div. He was previously general manager of engineering and construction.

**Stauffer Chemical Co.** Philip H. McLaughlin, formerly head of the Sales Development Dept., has been appointed manager of sales administration at Stauffer's New York office. McLaughlin will be in charge of product managers, sales development and the scheduling department of the Industrial Chemicals Div.



McLaughlin

Martin P. Kerins is new sales manager, industrial national accounts, with headquarters in New York.

**Union Bag-Camp Paper Corp.** announces appointment of William W. Dipman as director of market research and development. Since joining the Union organization in 1947 he has served as sales representative, district manager for the Multiwall Bag Div. and as assistant to the vice president in charge of bag sales.

**Yale & Towne Mfg. Co.** John T. McCarley is named general manager of the new West Coast Materials Handling Div. manufacturing plant at San Leandro, Calif.

MAY, 1957



## MURIATE OF POTASH for the PLANT FOOD INDUSTRY

THIS symbol stands for high-grade coarse and uniform Muriate of Potash (60%  $K_2O$  minimum). Southwest Potash Corporation provides a dependable supply of HIGH-K\* Muriate for the plant food industry.

\*Trade Mark

### Southwest Potash Corporation

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**EASY TO FORMULATE** **SAFE TO HANDLE** **STABLE IN LIGHT** **APPROVED FOR DAIRY CATTLE** **REPELS ROACHES AND ANTS**  
**REPELS RESISTANT INSECTS** **CAN BE USED AROUND FOOD** **ODORLESS** **STABLE IN STORAGE** **VAST CONSUMER MARKET** **COSTS LESS**  
**MISCIBLE IN SOLVENTS** **NO INHALATION HAZARD** **COMPATIBLE WITH TOXICANTS** **STABLE IN MOISTURE** **NO INSECT CONTAMINATION** **NO SKIN IRRITATION**  
**REPELS STABLE FLIES** **NO RESISTANCE** **TRUE REPELLENCY** **LASTS LONGER** **EFFECTIVE ALONE** **NON-CORROSIVE**

**ENTIRELY NEW!**  
**23**  
**PROVEN ADVANTAGES**

**Tabutrex**  
 INSECT REPELLENT

## BUILDS A BARRIER AGAINST INSECTS

Just a few of the advantages headlined above would be enough to make TABUTREX insect repellent a profitable material for your operations. But TABUTREX doesn't have "just a few" . . . it has 23 separate and distinct proven advantages.

### TRUE REPELLENCY

With the introduction of TABUTREX, "insect repellency" now has a new meaning. Dairymen, cattlemen and plant sanitarians have long been demanding a safe repellent that *actually repels insects* . . . and keeps repelling. *TABUTREX meets this tremendous demand!* Now, at last, dairy cattle and other farm animals can be safely protected from loss in weight and decreased milk production because of the discomfort of biting flies.

### SEEING IS BELIEVING

Never before has a repellent performed so effectively, so safely, so economically. Don't compare TABUTREX with other products . . . there just isn't anything like it anywhere.

See for yourself how TABUTREX works! Flies veer away from it as if they had struck an invisible curtain. Roaches refuse to rest on it. Yet it has no unpleasant odor.

### SAFE

*TABUTREX is so safe that it has been approved for use on dairy cattle.*

### CONTROLS RESISTANT INSECTS

Here is a new, effective way to control resistant insects. House flies are controlled in enclosed areas simply by applying TABUTREX to walls and ceilings. The area becomes so unpleasant for them (but not for animals or humans) that they leave at once . . . and stay away! Even resistant insects just can't stand TABUTREX!

### EASILY FORMULATED

TABUTREX is compatible with insecticides when it is desired to use them together, although it is not necessary to use it as an additive. It needs no help from the chlorinated hydrocarbons, the organic phosphates or pyrethrins. It can stand squarely alone! Soluble in oil—emulsifiable in water.

### NOW AVAILABLE

Whether you are a formulator, a pest control operator or a consumer, TABUTREX is certain to become one of your most important, most valuable, most profitable insect control tools.

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### FREE INFORMATION

Send today for full information and price list. Just fill in the coupon, write or call EAstgate 7-9350, Chicago. Please indicate any specific applications of TABUTREX in which you may be interested. Your inquiries will receive our immediate attention.

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 Please rush me all important data on TABUTREX insect repellent.  
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 Type of Business \_\_\_\_\_

(Please put specific inquiries on separate sheet)

## CALENDAR

**May 13-15.** Carolinas-Virginia Pesticide Formulators Assn. spring convention, Cavalier Hotel, Virginia Beach, Virginia.

**May 17-18.** Two-day School for chemical analysts in industry and state labs, sponsored by the National Plant Food Institute at Purdue Univ., Lafayette, Ind.

**May 20-22.** Chemical Specialties Manufacturers Association, Mid-Year Meet. Drake Hotel, Chicago.

**June 6-8.** Manufacturing Chemists' Association Annual Meeting, Greenbrier Hotel, White Sulphur Springs, W. Va.

**June 9-12.** National Plant Food Institute, annual meet. Greenbrier Hotel, White Sulphur Springs, W. Va.

**June 17-19.** 15th Convention, Assn. of Southern Feed and Fert. Control Officials, Dinkler-Tutwiler Hotel, Birmingham, Ala.

**June 23-26.** American Society of Agr. Engineers Annual Meeting, Mich. State Univ., East Lansing.

**June 26-28.** Eighth Annual Fert. Conf. of Pacific N. W., Benson Hotel, Portland, Ore.

**July 10-14.** Plant Food Producers of Eastern Canada Convention, Manoir Richelieu, Murray Bay, Que.

**July 17-19.** Southwestern Fert. Conf. and Grade Hearing, Galvaz Hotel, Galveston, Tex.

**Aug. 13-14.** Ohio Pesticide Institute annual summer meeting, Ohio Agr. Experiment Station, Wooster.

**Sept. 5-6.** Great Lakes States Anhydrous Ammonia Meeting, Michigan State Univ., East Lansing, Mich.

**Oct. 2-4.** Annual Beltwide Cotton Mechanization conference, Shreveport, La.

**Oct. 3-5.** Pacific Northwest Plant Food Assn. Annual Convention, Sun Valley, Idaho.

**Oct. 17.** Conference on Chemical Control Procedures, Shoreham Hotel, Washington, D. C. Sponsored by the National Plant Food Institute.

**Nov. 3-5.** 34th annual convention, California Fertilizer Association, St. Francis Hotel, San Francisco.

**Nov. 6-8.** Fertilizer Industry Round Table, Sheraton Park Hotel, Washington, D. C.

**Dec. 11-13.** Agricultural Ammonia Institute annual meeting, Hotel Marion, Little Rock, Arkansas.



# JOHN DEERE VITREA

45% NITROGEN FROM UREA

Your order for **VITREA** means fast, dependable service on premium quality nitrogen . . . backed by a hard hitting, "farm-geared" advertising program that helps pave the way to bigger sales for you.

## JOHN DEERE NITROGEN SOLUTIONS

Let a qualified **JOHN DEERE** technical representative show you how to save money and at the same time improve the physical condition of your fertilizer by using **JOHN DEERE Urea-Ammonia Solutions** . . .

AVAILABLE NOW!

Grand River Chemical Division of  
**DEERE & COMPANY**



PRYOR, OKLAHOMA PHONE 4000

## FARM CHEMICALS

### Associations & Meetings

#### NATION-WIDE FARMER SURVEY PLANNED BY NPFI

A national survey "to determine the factors which influence the farmer to buy fertilizers" soon will be undertaken by the National Plant Food Institute, as a preliminary step in expanding the fertilizer market. The survey was authorized by the Institute's board of directors.

"Information obtained in the survey more clearly will point the direction that should be followed to achieve an expansion of the fertilizer market," said Dr. Russell Coleman, executive vice president of NPFI.

"The fertilizer industry has a productive capacity of 25 to 50 per cent more plant food than it is now selling. Yet agricultural leaders say that fertilizer usage should be at least twice the present consumption. The need for an accelerated promotional program, conducted in harmony with the recommendations of the land-grant colleges and other recognized agricultural agencies, is apparent."

Dr. Coleman said that "plans for a forward looking program to achieve greater fertilizer acceptance and usage now are in the preliminary stages," and added that "shortly, a detailed promotional program will be presented to Institute members for their consideration."

#### REPORT ON INSECT CONTROL AT MINNESOTA MEETING

Several recent developments in the control of harmful insects on Minnesota farms were reported at the annual Red River Valley Winter shows in Crookston, Minn., by Austin Haws, University of Minnesota entomologist.

Among these was a suggestion for control of the Colorado potato

beetle, which has developed some resistance to DDT. University entomologist A. G. Peterson suggested that this resistance to DDT might be overcome by using toxaphene, dieldrin or heptachlor in alternate years.

Good control of the sweetclover weevil, which recently threatened this crop, now is possible through use of several insecticides, Haws added. In fields of light weevil infestation, applying granular insecticides mixed with seed gave some protection to new seedlings of sweetclover. In heavy infestations, this control measure did not work well.

#### ALA. PEST CONTROL GROUP ELECTIONS

George Williamson, Agricultural Service Co. of Montgomery, recently was re-elected president of the Alabama Association for the Control of Economic Pests.

Association directors include O. H. Bowden, Farmers Marketing Exchange, Montgomery, and George P. Wilson, Summerdale aerial applicator.

#### SCHEDULE SALESMEN'S SHORT COURSE IN GA.

A Fertilizer Salesmen's Short Course will be held at the University of Georgia's Continuing Education Center in Athens, August 27-29, the Georgia Plant Food Educational Society recently reported.

Each manufacturer and materials company in the state will be given the opportunity to send one man. Facilities and staff personnel force the College of Agriculture to limit attendance at the short course to 60, Ralph Wehnt reported.

#### SAFETY TALKS FOR FOREMEN FROM NSC

Near Misses . . . Keep Your Guard Up . . . Stay on Your Feet—these aren't corner instructions to a punchy boxer, but some of the titles in a new volume of "Five Minute Safety Talks for Foremen."

Published recently by the National Safety Council, Book 7 contains 52 talks on accident prevention prepared by Roland F. Blake, editor and co-author of *Industrial Safety*, a book on accident prevention fundamentals.

Further information and prices are available from the National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

#### SAMPLING WITH SOIL TUBES FROM NPFI



County Agent Frank Stancil of Oconee County, Georgia, works with A. S. Giles in taking a soil sample from one of his fields. They are using one of the soil tubes which the National Plant Food Institute furnished each county agent in the state.



# UNIFORM

## IN GRADE AND GRIND



You want quality phosphate rock that's uniform in grade and grind. We give it to you every time... because of *quality control*. Your phosphate is sampled and tested in our analytical laboratories at least five times before shipment. That's *quality control*... control at every stage in production: washing, blending, drying, grinding and loading. You're sure to get what you want... when you want it... in the tonnage you need... when you order *International Quality Controlled Phosphate Rock*.

*for Industry*

*and Agriculture*

*Quality Controlled*

# PHOSPHATE ROCK

- \* for the manufacture of complete fertilizers
- \* for the manufacture of industrial chemicals
- \* ground rock phosphate for direct application to the soil



PHOSPHATE MINERALS DIVISION

**INTERNATIONAL MINERALS & CHEMICAL CORPORATION**

GENERAL OFFICES: 20 NORTH WACKER DRIVE, CHICAGO 6

PHOSPHATE MINES AND PLANTS IN FLORIDA AT NORALYN, PEACE VALLEY, ACHAN, MULBERRY; IN TENNESSEE AT MT. PLEASANT, WALES AND GODWIN



## 10,000 hours . . . only \$700 repair costs

*Work record of first Michigan Tractor Shovel important since today's Michigans have same basic power train design*

When the first Michigan Model 75A Tractor Shovel rolled out of Clark's Benton Harbor (Michigan) plant in 1954, company engineers *knew* it was good. But who could expect it to put in 10,000 working hours on a tough job . . . and still be "good enough to last many, many more years," (according to the satisfied owners, Indiana Farm Bureau's Indianapolis fertilizer plant). Five months a year, their "old" 1¼-yard Michigan Tractor Shovel operates on a *three-shift basis*—moving an average of 60,000 pounds of superphosphate and other materials *per hour* from storage piles to mixing units. It also handles mixed fertilizer, cleans spillage, and pushes freight cars.

### Still has original tires, axles

In service equivalent to 5 years' normal 8-hour-a-day use, replacement parts have cost only \$700, according to Lewis Risinger, Master Mechanic. "And," he says, "we've *never broken an axle, or replaced a tire*, which is unusual in our operation. I need only three socket

wrenches to take the whole power-train apart—it's a fast, simple job that sure cuts downtime."

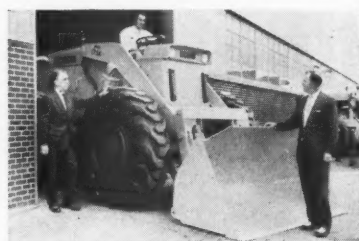
### Operator praises power shift transmission

"I've noticed," says Plant Supt., Melvin Leach, "that whenever there's a choice, operators always pick the Michigan. Even a new man learns to operate it in a hurry." Operator Bob Jefferson especially likes the "power shift and steer, the bucket action, and the fact you don't have to 'grind' gears and wheels to keep close to the pile."

### Liked the first—bought four more

Since he authorized purchase of this first Michigan Tractor Shovel, Ben Scharrer, head of the Bureau's Fertilizer Division, has bought four more Michigans for Bureau plants in Indianapolis and Jefferson, Indiana. "One of the things I've been pleased to see," says Mr. Scharrer, "is that there have been no changes in the basic Michigan design. Except for natural wear, the first

Michigan is as up-to-date as machines coming off the line today!"



### 6000th MICHIGAN NOW ON THE JOB

Michigan Tractor Shovel No. 6,000—produced a little over two years after the first one—is now at work for Ohio Gravel Co., Cincinnati. It has the same all-Clark "flywheel to drive-wheel" power train as do the first and all other Michigan Tractor Shovels.

Michigan is a registered trade-mark of  
**CLARK EQUIPMENT COMPANY**  
 Construction Machinery Division  
 2461 Pipestone Road  
 Benton Harbor 18, Michigan

In Canada: Canadian Clark, Ltd.,  
 St. Thomas, Ontario

**CLARK®**  
**EQUIPMENT**

**A CAR LOAD OR A TRAIN LOAD**



*Fine Texture, Small Particle  
Size For Maximum  
Ammoniation-Granulation*

Our huge production, large storage and curing facilities is your assurance of a readily available supply of Triple Superphosphate of highest quality that has had weeks of proper air curing. A product of rigidly controlled chemical and physical structure, fine texture, small particle size, 46% available  $P_2O_5$  that has been preshipping conditioned for immediate inclusion into your fertilizer processing.

**RIGID QUALITY CONTROL**

Through Six Basic Chemical and Physical Analysis

**HIGH WATER SOLUBILITY**

High Water Solubility is a Characteristic of all 3 Grades

**RUN-OF-PILE**

Fine Texture, Highest Porosity, Large Surface Area, Small Particle Size, for Maximum Ammoniation-Granulation.

**GRANULAR**

Dust Free, Free Flowing, Uniform Particle Size, Medium Hardness, No Bridging Over, for Direct Soil Application.

**COARSE**

For Intermediate Ammoniation to Produce a Semi-Granular Product. Also Affords Excellent Compatible Mixing with Granular Potash, for Minimum Segregation, in Alkaline Grades.

There's a **BRADLEY & BAKER** office near you. Their representative would be pleased to consult with you on your requirements and to advise on your most convenient delivery routings.

**U.S. PHOSPHORIC  
PRODUCTS**  
TAMPA, FLORIDA

Division

TENNESSEE



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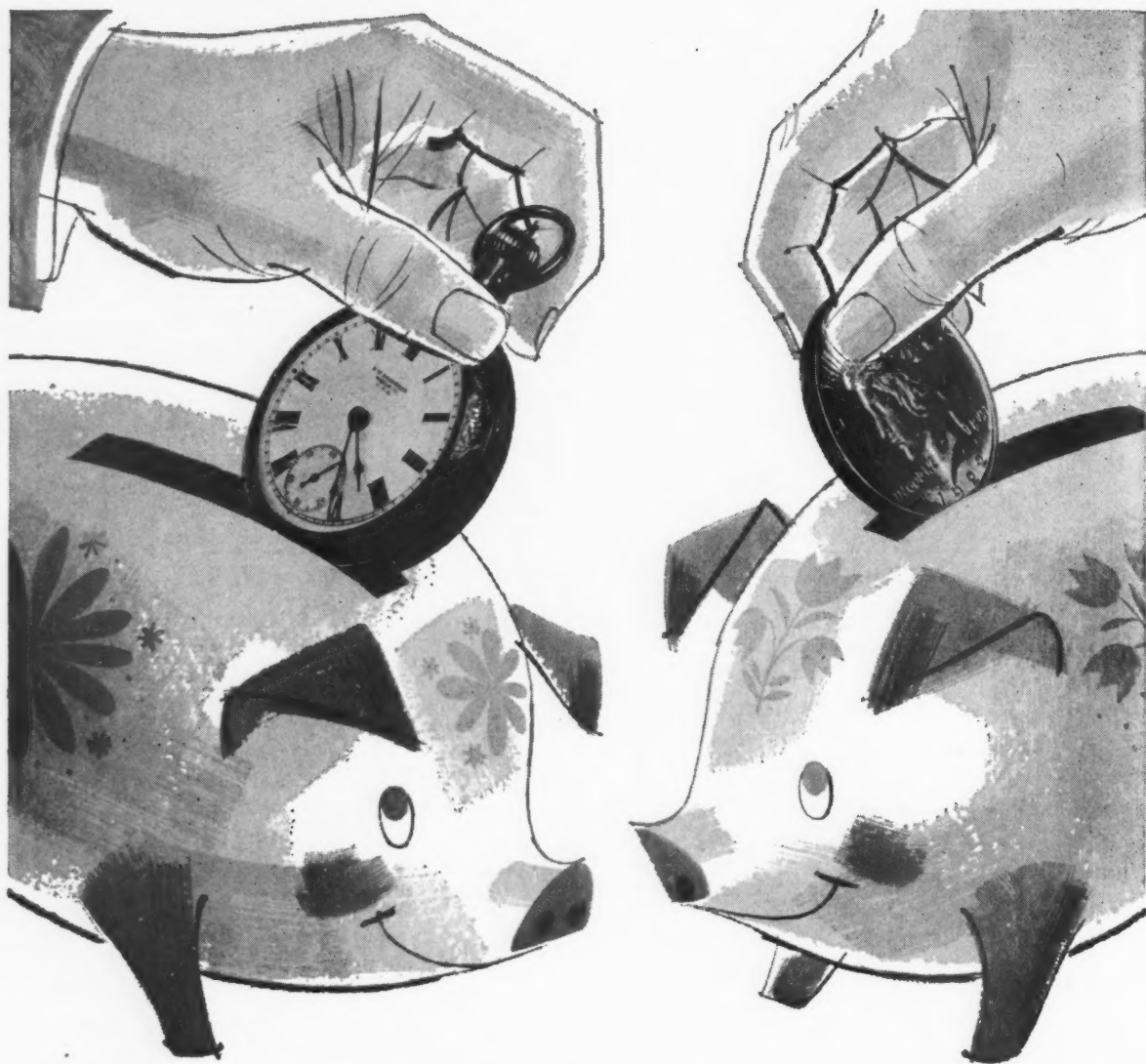
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## TIME IS MONEY... SAVE BOTH!

### ORDER NITROGEN PRODUCTS FROM SINCLAIR NOW

There are two big reasons why you should sign now with Sinclair for your supplies of nitrogen solutions, anhydrous ammonia and aqua ammonia.

First — the completion and opening of a centrally-situated new plant in Hammond, Indiana, means substantial savings in delivery time and shipping costs for most Mid-West nitrogen users.

Second — your seasonal supply problem can be solved by this plant's vast storage capacity . . . products will be delivered when you need them to meet your production schedule.

Let Sinclair help you solve your nitrogen supply problems and save you time and money in the bargain. Phone or write . . .

## SINCLAIR CHEMICALS, INC.

(Affiliate of Sinclair Refining Company)

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155 North Wacker Drive, Chicago 6, Illinois — Phone Financial 6-5900



# VIEWING WASHINGTON

with Farm Chemicals  
Washington Bureau

on agriculture

Soil Bank funds to be cut a quarter of a billion dollars by recommendation of President Eisenhower. The reduction is in funds for the year beginning July 1--from the original request of \$1,254 million down to \$1,000 million.

This does NOT mean that there will be less farmer participation by federal order. On the contrary, the government would prefer greater participation. The reason the Administration can make this cut--and it's the first budget-cutting recommendation by the Administration this year--is that farmers are not signing up as rapidly in the Conservation Reserve part of the program as the Administration had hoped.

Most of the cut--which Congress is expected to expedite--is in the Conservation Reserve. The annual fund for this is \$450 million. The Administration thinks it'll need only about \$225 million. The original estimate was based on a goal of 20 million acres signed--but less than 10 million actually will get into the program this year. Payments will be made from the new fiscal year's budget.

Main reason for relatively small sign-up, according to Secretary Benson, is that farmers don't want to tie up land for 3, 5 or 10 years as required under Soil Bank contracts.

Economy-minded Congress is not expected to slice the Soil Bank funds and let it go at that. There's growing congressional sentiment to consolidate the Conservation Reserve with ACP--the Agricultural Conservation Program.

This could mean one of two things: Either (1) boosting all federal conservation cost-sharing to 80 per cent as now is done in the Conservation Reserve, or (2) cutting all federal conservation cost-sharing to a maximum of 50 per cent, as now exists under ACP.

Price support for corn growers who ignore acre allotments now is a stronger possibility since Congress failed to provide a new corn program.

It will depend, however, on the prospects for the crop as the growing season progresses. If the crop looks bigger than 3 billion bushels, such supports will be extended. Official reasoning is that a big harvest without adequate support would break the market this fall--and spur a gigantic and unwanted increase in livestock production.

Break-up of the long drouth over much of the Southwest and Great

Plains is good news to both farmers and chemicals salesmen. It means that farmers in those areas for the first time will go all out to make big crops this year. This is particularly true of cotton, wheat and grain sorghums. If the improving moisture conditions continue--in all probability it means more acreage will go into crops next year.

# VIEWING WASHINGTON

## on business

Corporations are not likely to share in the federal income tax reduction now definitely in the wind for 1958. Individual tax cuts are getting priority, with small business tax relief next.

Reason is that the big push to reduce taxes comes straight from the grass roots. Tax-cutting mail along with budget-cutting demands comes from the "little fellow." It's straight talk from home—which always counts heaviest with law-makers up for re-election next year.

One top Senate tax authority says that corporate taxes—already extended for another year—will have to wait for reduction until the budget is cut still further. This means corporate tax reductions won't come into the picture until 1959. The picture could change, but that's it as of now.

Are income tax reductions sure? They're as sure as anything is when a majority of Congress, and the Administration, favors it.

President Eisenhower has indicated he favors a tax cut if the budget permits. His voluntary suggestion to chop \$254 million from the Soil Bank is the tip-off. Other Administration budget-cutting recommendations now are expected. Senate Finance Chairman Harry Byrd, who has led the fight to hold the tax line in the past, now has given his blessings to a cut—provided \$2 to \$3 billion are cut from the peacetime record budget of \$71.8 billion. The bulk of this is expected to come from foreign aid funds.

Pre-testing of food additives may make headlines this spring—but there is almost no chance that a law requiring it will be approved this year.

Food & Drug Administration has offered its version of a pre-testing law, and hearings are ahead. This bill would require chemical manufacturers to furnish FDA with scientific evidence establishing that proposed uses of chemical food additives would be safe—before they are actually used in or on foods. The proposal follows closely the procedure set under the 1954 Miller amendment on pesticides.

Grasshopper control is to get a big boost this year from additional money from Congress.

The Agriculture Department has requested for \$1 million extra combat the pest on Western ranges. Four to five million acres are to be dusted. Federal government pays up to 1-3 of control costs.

New Mexico potash reserve, containing an estimated 17.4 million tons of potash ore, has been opened by the Interior Department for competitive bidding.

The move is designed to keep nearby refineries in operation in view of far more significant ore deposit discoveries elsewhere. Area involved is a 23-year-old reserve embracing 1,840 acres of public lands in Eddy County. Gross value of the ore is estimated at \$100 million.

THE MAN WITH THE



MULTIWALL PLAN



**UNION  
PACKAGING SPECIALIST  
DON DEININGER**

**saves  
Multiwall  
user  
\$8 per M  
through  
specifications  
review**

A Chemical Company, already using 43 different sizes and types of Multiwalls, planned to add new products to its line. Union Packaging Specialist Don Deininger recommended a simplification of Multiwall specifications and inventory. Union prepared a Specifications Manual for the manufacturer, also simplified, unified and modernized his bag designs.

Results: user reported: (1) Union's recommendations for re-designing bag sizes and constructions in some instances saved as much as \$8 per M.

Union Multiwall Recommendations  
are based on this 5-point  
Packaging Efficiency Plan



- DESIGN
- EQUIPMENT
- CONSTRUCTION
- SPECIFICATION CONTROL
- PLANT SURVEY

(2) The new Specifications book enabled the customer to order bags more easily and accurately. It also simplified his inventory control.

(3) The new designs established a visual relationship between his family of products, enabled his sales force to do a better merchandising job.

This is a typical example of Union's 5-Point Multiwall Plan

in action. Perhaps it can produce gains in your own Multiwall packaging operation. Write for additional information.

Better Multiwall performance  
through better  
planning



UNION'S PACKAGE ENGINEERING DEPARTMENT will study your Multiwall bagging methods and equipment and make appropriate recommendations, regardless of the brand of Multiwalls you are now using.

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UNION BAG - CAMP PAPER CORPORATION  
233 BROADWAY, NEW YORK 7, N. Y.



**POTASH RAISES FARM INCOME.** The successful American oat farmer. He's up to date on all the latest farming methods. He knows, for example, that his soil only gives its best when regularly replenished with potash-enriched fertilizers. He does this every year, and his harvest is the envy of the entire county. This fellow is no smarter than his neighbors. Just knows his oats.

USP's Higrade muriate of potash is free-flowing and non-caking and has the highest  $K_2O$  content—62/63%  $K_2O$ . USP's Granular muriate of potash—60%  $K_2O$ —is also available.

#### UNITED STATES POTASH COMPANY

DIVISION OF UNITED STATES BORAX & CHEMICAL CORPORATION  
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Southern Sales Office: Rhodes-Haverty Building, Atlanta, Georgia



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FARM CHEMICALS



# Arcadian® News

Volume 2

For Manufacturers of Mixed Fertilizers

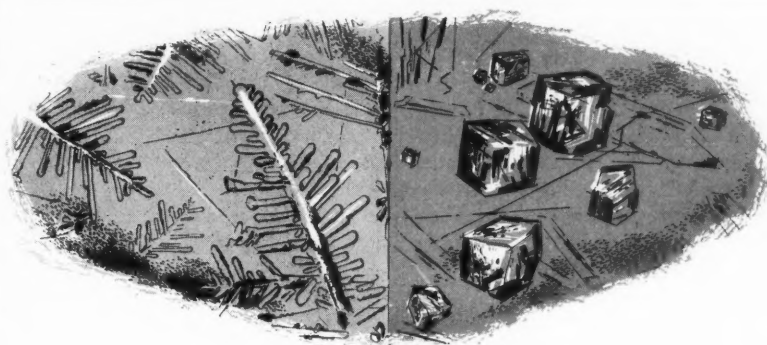
Number 5

## HERE'S HOW URANA® HELPS TO PREVENT FERTILIZER CAKING REACTS IN MIXTURE TO FORM CUBE-LIKE CRYSTALS

In the manufacture of mixed fertilizers, ammonium salts react with potassium chloride to form ammonium chloride crystals. If fertilizer has a tendency to cake at the factory or in the bag, it's often because these microscopic crystals are fern-like or needle-shaped and bind together in the mixture.

More and more fertilizer manufacturers are avoiding this cause of caking, by using URANA Nitrogen Solutions in the ammoniation process. The chemical reaction of these Solutions produces ammonium chloride crystals that are cube-shaped with much less tendency to bind together in the mixture.

When you use URANA Nitrogen Solutions, you get softer set in storage piles, easier, faster handling from bulk to bagging and far less secondary caking in the bag. The result is a better quality, better conditioned fer-



*Micrograph of ammonium chloride crystals.*

tilizer, and often a reduction in costs.

Five different URANA Nitrogen Solutions are available to fit every ammoniation situation, including the manufacture of high-analysis mixed goods. These Solutions range from 41% to 49% nitrogen in various combinations of ammonia, ammonium nitrate, and urea.

The cost per unit of urea nitrogen in URANA Nitrogen Solutions is ex-

ceptionally low. And, by getting three forms of nitrogen in one easy-handling solution, you give your fertilizer extra plant food value without additional handling and shipping.

*Start now to get all the facts on the many advantages of URANA Nitrogen Solutions. Contact Nitrogen Division, Allied Chemical & Dye Corporation, 40 Rector Street, New York 6, N. Y. Phone: Hanover 2-7300.*

# New Methods of Timing Fertilizer Increase Protein Content of Hay

**Grassland fertilization** has always been an attractive sales opportunity to the fertilizer manufacturer, however it has been difficult to get farmers to use heavy applications of fertilizers on grass hay and pastures. Recent developments in new methods of fertilizing grass now promise to open up this big market.

These methods, which call for the proper timing of heavy applications of fertilizer in the fall and spring, have resulted in big yields of forage containing 16% to 20% crude protein as well as a high content of total digestible nutrients.

## Four Tons of 20% Protein Hay

**Heavy application** of high-nitrogen fertilizer in the late fall quickly moves plant foods into the roots for use the following spring. Heavy application of nitrogen top-dressing in the late spring, a few weeks before harvest, greatly increases the protein content of the grass. Up to 70% of the nitrogen top-dressing moves directly into the protein of the first cutting of hay. Farmers using these new methods have produced as much as 4.4 tons of grass hay per acre with up to 20% crude protein content.

The high value of this extremely high quality forage makes heavy fertilization highly profitable. Ordinary grass hay yields 1½ tons per acre averaging about 8% crude protein or 240 pounds of pro-

tein equivalent per acre. When proper fertilization increases the yield to 4 tons of 20% protein hay per acre, or 1,600 pounds of protein equivalent, the farmer gets an extra 1,360 pounds of crude protein from the fertilizer.

The value of this extra protein will pay for a lot of fertilizer. The mixed fertilizer and the nitrogen top-dressing together should supply at least 200 pounds of actual nitrogen per acre with phosphorus and potash to balance. Grass ordinarily needs little potash, but the high-yield, high-protein program calls for plenty of potash to keep stalks stiff to prevent lodging.

## Importance of Nitrogen Timing

**To get these** big yields, it is important to apply a heavy nitrogen top-dressing just as the grass seedheads start to shoot out of the sheaves a few weeks before the first cutting. A cyclone seeder, or even airplane application, does this job well. This nitrogen top-dressing works better if plenty of complete fertilizer has been applied the previous fall to pack the roots full of plant food for early and continued spring growth.

Most of the late spring nitrogen top-dressing goes directly into the crop instead of being tied up by soil microbes. It shoots the protein content of the grass up very high. When the hay is cut at the

proper early stage for good palatability, the fiber stays low and the protein stays high, and the total yield is also high.

## Making Hay Really Pay!

**One reason** that fertilizing grasslands has been disappointing is the lack of a quick, easy analysis of the feed value of forage. Another reason is the fact that not enough high-nitrogen fertilizer has been used.

For example, when hay gets 100 to 150 pounds of nitrogen per acre, it will produce a higher yield but the protein content may remain low. When 200 pounds of nitrogen per acre is used, the protein content of the hay jumps up, double or more. That's what makes hay really pay!

Farmers producing high-protein hay will usually feed it to their own livestock. If they sell it, a price based on crude protein content makes good sense. One farmer, using a base price of \$25 per ton for 8% protein hay, adds \$1 per ton for each extra 1% of protein above 8%. Thus a 20% protein equivalent hay would sell for \$37 per ton.

*You can extend your sales season by using these new facts to sell more fertilizers for grasslands in the late fall and more nitrogen top-dressing for grasslands in the late spring.*



## Fertilizer Industry Benefits from Farm Youth Programs

### IN ADDITION TO ITS EXTENSIVE ACTIVITIES TO EDUCATE FARMERS ON FERTILIZERS NITROGEN DIVISION COOPERATES WITH 4-H CLUB AND F.F.A. FARM YOUTH PROGRAMS

If every farm were operated on an efficient, business-like basis, the use of fertilizer would be many times what it is today. An informed, progressive farmer would no more think of farming without fertilizers than he would of farming without tractors. The more really good farmers there are, the more fertilizer will be used.

Nitrogen Division, realizing this, actively supports efforts to raise the general standards of American farming. Farmers themselves, as well as the fertilizer industry, stand to gain much from such a program.

One of the ways in which Nitrogen Division contributes to agricultural improvement is its cooperation with the 4-H Club and the Future Farmers of America. These young farmers are eager to adopt modern practices to constantly improve their farming skills.

#### 4-H Club Field Crops Program

Nitrogen Division is the donor to the 4-H Field Crops Program, which last year had an enrollment of about 300,000 young farmers. As donor, Nitrogen Division provides six \$400 scholarships to the national winners, all-expense trips to the 4-H Congress to the state and national winners, and a maximum of four gold medals to the winners in each county. In addition, Nitrogen Division helps finance efforts to enroll more members in Field Crops, and has published an attractive Field Crops Manual for use by local club leaders. Nitrogen Division field men call on state 4-H Club offices to offer their assistance in furthering the Field Crops Program.

All of Nitrogen Division's work with 4-H is done in cooperation with the National Committee on Boys and

Girls Club Work. This organization, located in Chicago, serves as a liaison agency between donors and the Federal and State Extension Service, which operates the 4-H program.

Participants in the Field Crops Program learn to look on farming as a business. They keep detailed records of expenditures and cultural practices; they run comparison tests; they work always to "make the best better." And when they take over the family farm or go out on their own, you can be sure they will be better farmers for having been enrolled in the 4-H Field Crops Program.

#### Future Farmers of America

Nitrogen Division also contributes to the Future Farmers of America Foundation. The FFA, a club for boys enrolled in a high school vocational agriculture program, is directed by the Department of Health, Education and Welfare. Many FFA boys already carry on their own independent farming operations.

Fertilizer dealers and manufacturers can help farm youth programs in several ways. Perhaps you have a room that can be used as a club meeting place. You could provide local awards, give educational talks, or sponsor dinners. Probably most welcome of all would be a tour of your plant, or you may have fertilizer field demonstrations which will interest farm youngsters.

*Why not talk to your county agent about how you can help with the 4-H Field Crops Program. Or see your high school vo-ag teacher about lending a hand with the work of the Future Farmers.*



# NITROGEN *plus* SERVICE

There are many reasons why it pays you to deal with Nitrogen Division, Allied Chemical. You are served by America's leading producer of the most complete line of nitrogen products. You benefit from millions of tons of nitrogen experience and the enterprising research that originated and developed nitrogen solutions for the fertilizer industry. You are assured of dependable supplies from three huge plants at Hopewell, Ironton, and

Omaha. Your nitrogen is delivered to you by the best transportation facilities and equipment. You get technical assistance and formulation advice from the largest and most efficient staff of nitrogen experts. Your sales are supported by the most powerful advertising campaign ever conducted to sell fertilizers. Nitrogen Division is your headquarters for **NITROGEN *plus* SERVICE**. Look over the big line and contact one of the 14 offices listed below.



## Nitrogen Solutions

	CHEMICAL COMPOSITION %					PHYSICAL PROPERTIES		
	Total Nitrogen	Anhydrous Ammonia	Ammonium Nitrate	Urea	Water	Approx. Sp. Grav. at 60°F	Approx. Vap. Press. at 104°F per Sq. In. Gauge	Approx. Temp. at Which Salt Begins to Crystallize °F
<b>NITRANA®</b>								
<b>2</b>	41.0	22.2	65.0	—	12.8	1.137	10	21
<b>2M</b>	44.0	23.8	69.8	—	6.4	1.147	18	26
<b>3</b>	41.0	26.3	55.5	—	18.2	1.079	17	-25
<b>3M</b>	44.0	28.0	60.0	—	12.0	1.083	25	-36
<b>3MC</b>	47.0	29.7	64.5	—	5.8	1.089	34	-30
<b>4</b>	37.0	16.6	66.8	—	16.6	1.188	1	56
<b>4M</b>	41.0	19.0	72.5	—	8.5	1.194	7	61
<b>6</b>	49.0	34.0	60.0	—	6.0	1.052	48	-52
<b>7</b>	45.0	25.3	69.2	—	5.5	1.134	22	1
<b>URANA®</b>								
<b>10</b>	44.4	24.5	56.0	10.0	9.5	1.108	22	-15
<b>11</b>	41.0	19.0	58.0	11.0	12.0	1.162	10	7
<b>12</b>	44.4	26.0	50.0	12.0	12.0	1.081	25	-7
<b>13</b>	49.0	33.0	45.1	13.0	8.9	1.033	51	-17
<b>15</b>	44.0	28.0	40.0	15.0	17.0	1.052	29	1
<b>U-A-S®</b>								
<b>A</b>	45.4	36.8	—	32.5	30.7	0.925	57	16
<b>B</b>	45.3	30.6	—	43.1	26.3	0.972	48	46
Anhydrous Ammonia	82.2	99.9	—	—	—	0.618	211	—

Other ARCADIAN® Nitrogen Products: UREA 45 • A-N-L® Nitrogen Fertilizer  
Ammonium Nitrate • American Nitrate of Soda • Sulphate of Ammonia

## NITROGEN DIVISION Allied Chemical & Dye Corporation

MAIN OFFICE: 40 Rector Street, New York 6, N. Y., Phone: Hanover 2-7300



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Ironton, Ohio, P. O. Box 98 ..... Ironton 8-4366  
Omaha 7, Neb., P. O. Box 166 ..... Bellevue 1464

### Phone

Raleigh, N. C., 16 W. Martin St. .... Temple 3-2801  
Columbia 1, S. C., 1203 Gervais St. .... Columbia 3-6676  
Atlanta 3, Ga., 127 Peachtree St., N. E. Jackson 2-7805  
Memphis 9, Tenn., 1929-B South 3rd St. .... Whitehall 8-2692  
Columbia, Mo., P. O. Box 188 ..... Gibson 2-4040

Indianapolis 20, Ind., 6060 College Ave. Clifford 5-5443  
Kalamazoo, Mich., P. O. Box 869 ..... Kalamazoo 5-8676  
St. Paul 4, Minn., 45 N. Snelling Ave. .... Midway 5-2864  
Los Angeles 5, Cal., 2999 West 6th St. Dunkirk 8-2301  
San Francisco 4, Cal., 235 Montgomery St. Yukon 2-6840



## Chemicals

### 122—NEW INSECT-REPELLENT

The Glenn Chemical Company has full information and price lists now available for its new insect-repellent Tabutrex. The company claims that Tabutrex has 23 separate and distinct proven advantages. More complete information and price lists are available free by just

CIRCLING 122 ON SERVICE CARD

### 123—FERTILIZER + GRAFLOW

The United States Graphite Co. claims that fertilizer + Graflow equals a better, more flowable fertilizer in the field.

If you're interested in getting more information about the advantages of Graflow just

CIRCLE 123 ON SERVICE CARD

### 124—PESTICIDE PROGRAM

In connection with its 50th anniversary observance, the California Spray-Chemical Corp. has prepared literature about its pesticide dealer program. The program designed to sell Ortho products is using point-of-sale displays, national advertising, movies and other educational aids.

For more complete information on Cal-spray's pesticide dealer program just

CIRCLE 124 ON SERVICE CARD

### 125—CRAG FLY REPELLENT

Crag Fly Repellent, mixed with insecticides, is being used by more and more formulators. The manufacturer claims his repellent used with an insecticide gives you two sales-building advantages: good repelling action and extended and improved effectiveness of the insecticide. For more free information about formulation of fly sprays with Crag Fly Repellent just

CIRCLE 125 ON SERVICE CARD

### 126—NEW WEED KILLER

Urox Weed Killer, developed by the General Chemical division of Allied Chemical & Dye Corp., is a new granular chemical herbicide designed for dry application with simple inexpensive equipment.

The manufacturer claims it gives full season control of most annual and perennial grasses and broad-leaved weeds in non-crop areas.

For more free information on Urox just

CIRCLE 126 ON SERVICE CARD

### 127—SULFUR SIDELIGHTS

If you have any questions about sulfur they probably are answered in the 50-page booklet published by the Stauffer Chemical Co. entitled "Stauffer Sulfurs."

The booklet reviews handling operations, physical and chemical properties, the history of sulfur, its occurrence and uses, production and refining processes and etc.

For your copy just

CIRCLE 127 ON SERVICE CARD

MAY, 1957

FREE INFORMATION to help you  
solve fertilizer, pesticide problems

## Reader Service

### How to use the READER SERVICE CARD

- Circle number of literature you want.
- Print or type your name, position, company and address.
- Clip and mail the Service Card.

### 128—COLORFUL PENNSALT FOLDERS

The Pennsylvania Salt Mfg. Co. has just released two colorful folders on the use of its chemicals in the control of the European Corn Borer and perennial weeds and grasses. For your free copies

CIRCLE 128 ON SERVICE CARD

### 129—HERE COMES HEPTACHLOR

This is the title of the new spring promotional campaign for Heptachlor sponsored by the Velsicol Chemical Corporation. This stepped-up campaign provides a perfect tie-in for formulators. More information about how this campaign can help you is available free by just

CIRCLING 129 ON SERVICE CARD

### 130—ONLY TWO EMULSIFIERS NEEDED

Formulators can prepare almost any type of emulsifiable concentrate with only two emulsifiers, Triton X-151 and Triton X-171. These two emulsifiers, produced by Rohm & Haas, benefit you in three ways: better formulations, simplified operations and lower costs. For free information on how they can help you just

CIRCLE 130 ON SERVICE CARD

### 131—NEW CHEMICAL BOOKLET

A new 20 page booklet entitled "Harshaw Chemicals for Agriculture" has been prepared by the Harshaw Chemical Co. Besides several sections on plant nutrition, trace elements, fungicides, and weed killers, the booklet also contains facts about the company and the products it produces.

The booklet is available free by just

CIRCLING 131 ON SERVICE CARD

## Process Equipmt.

### 132—PORTABLE RIBBON MIXERS

A new line of portable heavy-duty horizontal ribbon mixers is being manufactured by the Young Machinery Company.

The new mixers with varying working capacities from 0.34 cubic feet to 20 cubic feet are furnished as complete units with motors and drives.

The company recommends them for mixing dry, free-flowing powders or granular materials.

For more free information on this new line of ribbon mixers just

CIRCLE 132 ON SERVICE CARD

### 133—MILLS AND MIXERS

The Gruendler Crusher and Pulverizer Co. has available several colorful brochures describing its line of mixers and hammer mills. These brochures and others on the Gruendler line of plant equipment are available free by just

CIRCLING 133 ON SERVICE CARD

### 134—NEW JOY AIR COMPRESSOR

Information is now available on the new heavy-duty industrial air compressor manufactured by the Joy Manufacturing Co.

The new unit, labelled the WN-224, is the largest package-type compressor available, according to the manufacturer's report. Output at 80-125 PSIG is rated from 2418 to 6048 CFM, depending on horsepower.

For more free information on this new compressor just

CIRCLE 134 ON SERVICE CARD

## Packaging

### 135—PACKAGING EFFICIENCY

The Union Multiwall recommendations, for your packaging system, included in their 5-star packaging efficiency plan are: Design, Equipment, Construction, Specification Control and Plant Survey.

For more free information about this service just

CIRCLE 135 ON SERVICE CARD

### 136—THREAD IS IMPORTANT

The Bemis Bro. Bag Co. tested 10,000 bags with their new acid-resistant thread and reported no failures. If you would like more information about the Bemis bag with the acid-resistant thread just

CIRCLE 136 ON SERVICE CARD

### 137—KRAFTPACKER BROCHURE

A booklet has just been made available on the newest Kraftpacker Automatic Open Mouth Bag Filling Machine that accommodates weights from 25 to 200 pounds. There are a dozen or more new features and refinements, Kraft Bag reports, including heavier gauge steel construction and individually adjustable tubular legs.

For your free copy of the illustrated brochure

CIRCLE 137 ON SERVICE CARD

## Materials Handling

### 138—NEW CLARK BROCHURE

A six-page, four-color brochure describing the design, operation and advantages of the Clarklift-30, the gas-powered 3000 lb. capacity model in its new Clarklift Line of fork trucks, is now available from the Industrial Truck Division, Clark Equipment Company.

For your free copy just

CIRCLE 138 ON SERVICE CARD

### 139—FORK TRUCK BROCHURE FROM CLARK EQUIPMENT

Interested in fork trucks? If so, you better get a copy of the new four-color,

eight page brochure describing the operational characteristics and mechanical details of its line of electric fork trucks that is available free from the Industrial Truck Division of Clark Equipment Company.

For your free copy just

CIRCLE 139 ON SERVICE CARD

### 140—PAYLOADER TRACTOR-SHOVELS

Literature is available from The Frank G. Hough Co. on their new-style Payloader tractor-shovels. They claim that because the Payloader digs more, carries more, and delivers more you can double production without increasing labor costs.

For more free information on Payloader tractor-shovels just

CIRCLE 140 ON SERVICE CARD

### 141—VIBROLATORS

Vibrolators have found wide application in moving, sifting, settling, conveying or packing granular material of every type. A new brochure giving complete information—specifications, diagrams and photographs—on the Vibrolator line is available free from the Martin Engineering Company.

If you want a copy of this informative bulletin just

CIRCLE 141 ON SERVICE CARD

## Miscellaneous

### 142—RESISTOFLEX BULLETIN

Design, construction and typical applications of Fluoroflex-T pipe—a chemically inert, fracture-proof pipe processed from Teflon resin and glass fibre—are described in a colorful new four-page bulletin issued by the Resistoflex Corporation.

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### 143—"KARBATE" SELECTION BULLETIN

The National Carbon Company has just published an expanded bulletin on recommendations for the application of "Kar-

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### 146—EXPANDING OR BUILDING?

If you're thinking about building a new fertilizer plant or expanding your present facilities it will pay you to read Bulletin 8000 published by Dorr-Oliver Inc.

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### 147—SPRAY NOZZLE PROBLEM?

If you have spray nozzle problems the Spraying Systems Co. has several bulletins available free that may help solve your problem. For copies of the bulletins just

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See pages 59, 61 & 64 for information  
on these Reader Service Numbers—

148—Welded Seam Bag

149—PVC Fan

150—TAP-A Stapler

151—Gas Monitoring

152—New Kraftpacker

153—Hi-Pressure Pump

154—Dust-Tite Valve

155—Haveg Cement

156—Montrose Repellent

157—Thiram from Aceto

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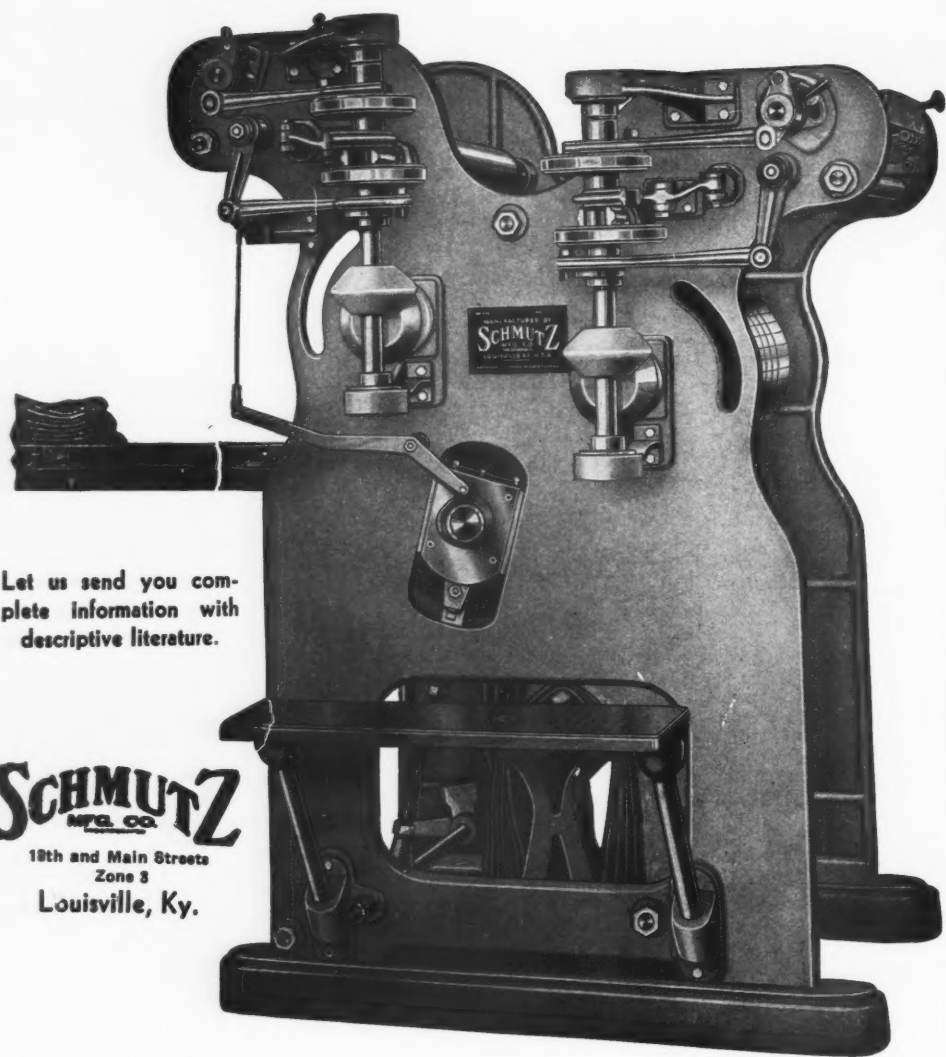


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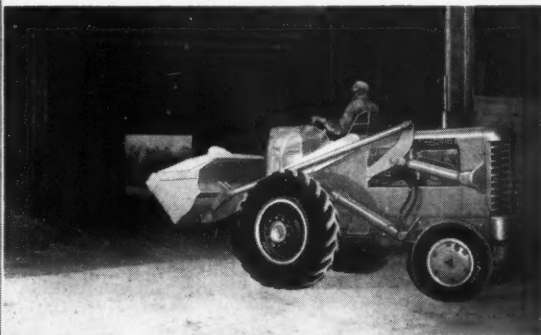
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# New Roads and the

## *Farm Chemicals Industry*

**T**HE new Federal Highway Program is opening the door to a peace-time project that will change the face of the nation more than the great Western movement did when millions of acres of green grass was turned to black sod.

What's more, this unprecedented program can provide a significant new market for the farm chemicals industry.

During the course of the project a million men and women will be employed; it will affect the social, economic and recreation habits of most of the people; it might mean the difference between survival and death in time of war. It is going to take around 13 years and at least \$51 billion to complete.

When this "national superhighway building and road improvement program" is complete it will provide better transportation routes between 42 of the 48 state capitals, 209 cities of over 50,000 population, and 88 per cent of U. S. industry. It provides for construction of 41,000 miles of new superhighways and improvements on 750,000 miles of primary and secondary roads. The Federal government is going to pay about 90 per cent of the bill and the rest will come from state treasuries.

It'll mean that for the first time in our history we will have uniform national standards for our now out-dated highway system. It'll mean an estimated saving of some 3500 lives a year because of the improved safety factor. It'll mean farm products will

move farther and faster and at lower cost. Industry will be able to move into more favorable tax areas and not have to be concerned about transportation facilities. It is indeed, a big program that is going to affect almost every segment of the nation's economy.

Bertram D. Tallamy, Federal Administrator of the new program, has said that the opportunity for social and economic progress in the nation which will result from successful completion of this system is beyond comprehension at this time.

The end result on the nation's economy may not be predictable at this time, but there is no denying that it is going to provide an expansive and continuing market for agricultural supplies in a non-farm field. This is especially true for the fertilizer and pesticide industries.

Because it is going to be so important to both industries, not only during the actual construction, but in the maintenance period also, FARM CHEMICALS during the next several months is going to present a series designed to provide you with facts, figures and suggestions that will serve as valuable background material for you in the years to come.

Our first instalment in this issue is on the outlook for the fertilizer industry. Next we will cover the pesticide field and following that we will penetrate deeper into some of the problems that will confront both industries in meeting this new market challenge.



# Outlook

## FERTILIZER



**W**HEN the Federal Highway Act was passed few people knew what effect it would have on the fertilizer industry. Everybody knew that its influences would be felt—but the extent of the influence was an unknown factor. The reason being, no accurate data available on just how much fertilizer is being used on highway roadsides at any particular time.

To remedy this situation the American Road-builders' Association gave the job of finding out to the Materials and Supplies subcommittee on Fertilizer and Mulch. The chairman of the committee is Dale Friday, of the Nitrogen Division, Allied Chemical and Dye Corp. Mr. Friday is also chairman of the Roadside Task Force of the National Plant Food Institute.

A nationwide survey recently was conducted by the Fertilizer and Mulch subcommittee, and the results are now available to the fertilizer industry. FARM CHEMICALS is printing the complete results of

that survey. The first half will appear this month and the last part in the next issue. We think it well may provide a basis for manufacturers', formulators' and mixers' sales planning and educational programs at state and community levels. A few of the important things that the survey brought to light are:

▲ Out of 41 states reporting, only eight gave a flat "yes" to the question, "Do you recommend doses of fertilizer for maintenance?" An additional 20 states reported "occasionally", "as warranted", or "on trouble areas only."

▲ Fourteen states said that they preferred granular fertilizer to the powdered form.

▲ Only three states said they preferred organic fertilizers to inorganic.

▲ Lime is required by recommendation mostly in the Middle Atlantic States, some in the deep South.

▲ Nearly all states reported fertilizer use in establishing turf and other vegetative cover and plantings.

IT'S TRITE BUT TRUE—AN OUNCE OF PREVENTION IS WORTH A POUND OF CURE





Here's another illustration of where preventive maintenance would have saved money.

▲ Few states reported using maintenance fertilizer.

▲ Twenty states reported using hydraulic equipment for fertilizer application.

▲ States reporting most fertilizer and lime use plus other maintenance practices were those that have an average of 30 inches of rainfall or over per year.

These are just a few of the answers that the survey produced. It also provides heretofore unavailable answers to questions about topsoiling, seeding, mulching, application rates and application methods.

One thing about the survey is that it certainly points out the neglect of "roadside fertilization" now

STATE	Specifications Provided by	Basis For Fertilizer Recommendations	Do You Fertilize Undisturbed Areas	Do Specifications Require Lime
ALABAMA	Engineering Department	Flat or Standard Treatment	No	Yes
ARIZONA	Engineering Department	None	No	No
CALIFORNIA	Landscape Department	Flat or Standard Treatment	No	No
CONNECTICUT	Landscape Department	Soil Test For Nutrient Level	No	In Some Areas
DELAWARE	Engineering Department	Soil Test For Nutrient Level	Yes	Yes
FLORIDA	Engineering Department	Flat or Standard Treatment	Yes	No
GEORGIA	Engineering Department	Standard Treatment & Soil Test	No	Some
IDAHO	Engineering Department	None	No	No
ILLINOIS	Engineering Department	Flat or Standard Treatment	No	Yes
INDIANA	Landscape Department	Flat or Standard Treatment	Yes	Yes
IOWA	Landscape Department	Flat or Standard Treatment	No	In Some Areas
KANSAS	Landscape Architect	Standard By Soil Types	Some	Where Need
KENTUCKY	Landscape & Engineering	Flat or Standard Treatment	No	Yes
LOUISIANA	Roadside Development	Flat or Standard Treatment	Yes	No
MARYLAND	Landscape Department	Soil Test For Nutrient Level	No	In Some Areas
MASSACHUSETTS	Landscaper & Engineer	Flat & Soil Tests	Yes	Yes
MICHIGAN	Forestry Maintenance	Flat or Standard Treatment	No	No
MINNESOTA	Landscape Department	Soil Test For Unusual Situation	No	By Soil Test
MISSISSIPPI	Landscape Supervisor	Soil Test Every 1000 Sq. Yds.	Occasionally	On New Projects
MISSOURI	Engineering Department	Flat or Standard Treatment	No	Yes
NEBRASKA	Engineering Department	None	No	No

and in the past. Why do we have such a situation? Probably because the states just haven't realized the need for roadside fertilizer and the industry hasn't made a concentrated effort to show them the advantages of a good fertilization program.

It is well to remember too that the idea of roadside fertilization is a fairly new one. With few exceptions, fertilizer has been used on roadsides for only about 20 years. The quantity used thus far is an insignificant amount when compared to that used in agricultural production and probably will continue to be a fraction of that used on the farm.

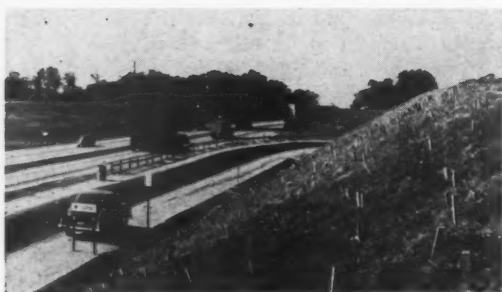
However, there is a great potential in this roadside fertilization program. New highway construction

under the Federal aid bill calls for the establishment and fertilization of about one million acres of turf. Add to this the acreage on 750,000 miles of primary and secondary roads and you have a market potential for the fertilizer industry that looks promising.

We know that turf and shrubbery planted along roadsides will prevent erosion; can be used for traffic guidance, screens and snowbreaks. Dense rows of shrubs have proved to be better protection than the customary guardrails. Modern roadbuilding experience has proved the functional value of skillful landscaping to eliminate headlight glare, relieve fatigue, reduce noises and protect adjacent real estate value.

Modern construction methods have necessitated

STATE	Specifications Provided by	Basis For Fertilizer Recommendations	Do You Fertilize Undisturbed Areas	Do Specifications Require Lime
NEVADA	Due to Arid Climate	little work of this type done	by Hwy Dept.	
NEW HAMPSHIRE	Engineering Department	Flat or Standard Treatment	No	In Some Areas
NEW JERSEY	Landscape Department	Flat or Standard Treatment	Yes	Some
NEW MEXICO	Maintenance Department	None	No	No
NEW YORK	Landscape Department	Inspection and Soil Types	Yes	In Some Areas
NORTH CAROLINA	Landscape Department	Flat or Standard Treatment	No	In Some Areas
NORTH DAKOTA	Engineering Department	None	No	No
OHIO	Landscape Department	Flat or Standard Treatment	Yes	In Some Areas
OKLAHOMA	Engineering Department	Flat or Standard Treatment	Yes	No
OREGON	Landscape Department	Standard Treatment Nutrient Test	Only With Hydraulic Seeding	No
PENNSYLVANIA	Roadside Development	Flat or Standard Treatment	Yes	Yes
RHODE ISLAND	Landscape Department	Flat or Standard Treatment	No	Yes
SOUTH DAKOTA	Engineering Department	None	No	No
TENNESSEE	Engineering Department	Standard	Yes	Yes
TEXAS	State Landscaper	Occasionally	Some	No
VERMONT	State Engineer	Standard	Some	No
VIRGINIA	Landscape Department	Flat or Standard Treatment	Yes	In Some Areas
WASHINGTON	Landscape Department	Flat or Standard Treatment	Yes	No
WEST VIRGINIA	Maintenance Division	Soil Test For Nutrient Level	Yes	Yes
WISCONSIN	Engineering Department	Flat or Standard Treatment	No	In Some Areas
WYOMING	Maintenance Department	None	No	No



The use of sod is one method of providing good roadside cover.

the exposure of sterile subsoils upon which must be grown grass and shrubbery. Roadside fertilization is necessary to keep these plantings alive. E. M. Davis, of the U. S. Soil Conservation Service, says that "fertilization of roadside vegetation is a protection, or form of insurance, on the tremendous investment of highway construction. There's no question about it. Grass won't grow indefinitely on roadsides without help. Satisfactory fertility levels are a 'must'."

During the first few years of the highway building program the contractors will use the greatest amount of fertilizer. They may or may not be governed by specifications set forth by the individual states. It

STATE	Lime Recommendations	Lime Required	Lime Carrier Specified	Grade of Fert. For Grass	Fert. Per 1000 Sq. Ft.
ALABAMA	Flat or Standard Treatment	5.5 or Below	Agri. Ground Limestone	8-8-8, 4-12-12 4-10-7	35 Lbs.
ARIZONA	Calcareous Soil	No Lime	None	Ammonium Sulfate	15 Lbs. Three Times Per Yr.
CALIFORNIA	None	None	None	11-8-4 Pelleted	15 Lbs. Three Times Per Yr.
CONNECTICUT	Soil Test For Nutrient Level	5.5 or Below	Agri. and Hydrated Lime	10-10-10 58% Organic	28 Lbs.
DELAWARE	Soil Test For Nutrient Level	6.0 or Below	Fine Limestone	5-10-5	25 Lbs.
FLORIDA	None	None	None	1st. 8-8-4 2nd. 4-8-4	7 Lbs.
GEORGIA	Standard Treatment	—	Agri. Ground Limestone	5-10-10, Nitrate Soda, $\text{NH}_4\text{SO}_4$	146 Lbs. N/A
IDAHO	None	None	None	Ammonium Nitrates	2-3 Lbs.
ILLINOIS	Flat or Standard Treatment	None	Agri. Ground Limestone	5-10-5 4-12-4	2 Lbs. N., 2 Lbs. P. & 2 Lbs. K.
INDIANA	Standard Treatment 2 Ton Per Acre	None	Agri. Ground Limestone	10-10-10	14 Lbs.
IOWA	Soil Test For Nutrient Level	None	None	200 Lbs. 20-35-0 Per Acre	5 Lbs.
KANSAS	County Agents Recommend	—	Agri. Ground Limestone	12-12-0, 10 6-10 10-20-0	250 Lbs./A
KENTUCKY	Flat or Standard Treatment	None	Agri. Ground Limestone	10-10-10 12-12-12	20 Lbs.
LOUISIANA	None	None	None	8-8-8, 10-10-10 12-12-12, 13-13-13	20 Lbs.
MARYLAND	In Park Area Treatment	5.5 or Below	Ground Limestone Hydrated Lime	5-10-5, 10-6-4 12-12-12	40 Lbs. of 5-10-5
MASSACHUSETTS	Flat & Soil Test	5.5 or Below	Agri. Ground Limestone	7-7-7	23 Lbs.
MICHIGAN	None	None	None	10-6-4 With Milorganite	40 Lbs. Preferred 20 Lbs. Used
MINNESOTA	No	—	None	None	None
MISSISSIPPI	Soil Tests Recommended	6.5 or Below	Agri. Ground Limestone	5-10-5 13-13-13	25 Lbs. of N., P., K.
MISSOURI	Flat or Standard Treatment	None	Agri. Ground Limestone	4-12-4	12 Lbs.
NEBRASKA	No	None	None	None	None



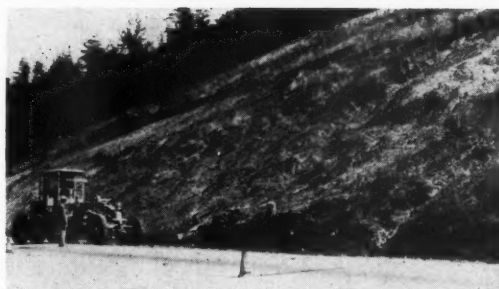
will be of great help to you then, to get to know the various contractors as well as the engineers who write specifications governing the fertilizer requirements. Familiarize them with what plant foods can do and explain the advantages of the different analyses and ratios for the local soil and planting conditions.

Some of the things that contractors usually want more information about are:

Differences between chemical and so-called organic fertilizers.

▲ How formulas differ from each other.

▲ How to interpret a soil analysis report in terms of plant food requirements.



This illustrates what happens when lack of adequate soil preparation causes failure of the cover crop.

STATE	Lime Recommendations	Lime Required	Lime Carrier Specified	Grade of Fert. For Grass	Fert. Per 1000 Sq. Ft.
NEVADA					
NEW HAMPSHIRE	Soil Test For Nutrient Level	None	Agri. Ground Limestone		30 Lbs.
NEW JERSEY	Occasional Sample	6.5 or Below	Agri. Ground Limestone	5-10-5	1260 Lbs./A 10-10-10
NEW MEXICO	No	None	None	None	None
NEW YORK	pH Tests	5.5 or Below	Agri. Ground Limestone	10-20-10, 10-10-10 10-6-4, 6-12-6	2 Lbs. of Nitrogen
NORTH CAROLINA	Soil Test For Nutrient Level	5.5 or Below	Agri. Ground Limestone	6-8-6 8-8-8	20 Lbs.
NORTH DAKOTA	None	None	None		
OHIO	Flat or Standard Treatment	None	Agri. Ground Limestone	10-6-4 12-12-12	20 Lbs.
OKLAHOMA	None	None	None	15-15-0 16-20-0	Prefer 20 Lbs. Use 10 Lbs.
OREGON	None	None	None	10-16-8	10 Lbs.
PENNSYLVANIA	Soil Test For Nutrient Level	6.5 or Below	Hydrated Lime	5-10-5, 8-16-16 10-6-4	20 Lbs. 5-10-5 10 Lbs. 8-16-16
RHODE ISLAND	Flat or Standard Treatment	None	Agri. Ground Limestone		≈ 23 Lbs.
SOUTH DAKOTA	None	None	None	None	None
TENNESSEE	Flat or Standard Treatment	None	Agri. Ground Limestone	4-12-4 4-8-4	500 Lbs./A
TEXAS	No	None	None	16-20-0, 16-20-8 5-10-5	400-600 Lbs./A
VERMONT	No	None	—	—	None
VIRGINIA	pH Test	5.5 or Below	Agri. Ground Limestone	10-20-10	2 Lbs. N., 4 Lbs. P., 2 Lbs. K.
WASHINGTON	None	None	None	10-10-10	7 Lbs.
WEST VIRGINIA	Soil Test For Nutrient Level	6.0 or Below	Ground Limestone Hydrated Lime	1-1-1, 1-2-1, 1-2-2	18-20 Lbs.
WISCONSIN	Flat or Standard Treatment	When Designated	Agri. Ground Limestone	Minimum 4-10-4	20 Lbs.
WYOMING	None	None	None	None	None

▲ Uses and advantages of liquid fertilizers.  
 ▲ Different methods of applying solid and liquid fertilizers.

▲ Advantages or disadvantages for their purposes of granulated and crystalline fertilizers.

▲ How to determine the best type of fertilizer when the specifications may call for 1-1-1 or 1-2-1.

The main driving force of this educational and promotion program should be directed toward the use of maintenance fertilizer. It must be remembered that one of the stipulations of the Federal highway bill is that the states maintain the new roads. In other words the job is primarily a local one. The story of the benefits and needs of plant

food will have to be directed toward concerned state highway officials, garden clubs, conservation groups and the various state regulatory services in each community in the nation.

Because of the wide scope of this operation, spearheading the drive to promote fertilizer usage on highway roadsides is a task that logically must fall to the local producers and distributors of fertilizer. To support a program of this type the industry is promoting a program aimed at teaching the value of proper fertilization practices to those in charge of allotting funds for this purpose.

As is pointed out in the survey the use of fertilizer is handled by maintenance engineers, right-of-way

STATE	Fertilizer Designates	Topsoil Prior to Seeding	Topsoil Prior to Treeplanting	Depth of Fert. Incorporated in Soil
ALABAMA	Standard Commercial	Yes—Cuts 4"	Yes—Hole Filled	3"
ARIZONA	Inorganic Nit. Granular Fert.	No	No	On Surface
CALIFORNIA	Pelleted Fert.	No	No	On Surface
CONNECTICUT	Organic Nit. Liquid Fert.	Yes	Yes	Surface-Mulch 2" Unmulched
DELAWARE	No	Yes 4"	Yes—Hole Filled	2"
FLORIDA	Inorganic Nitrogen	No	Yes	On Surface
GEORGIA	Inorganic	Yes	Yes	3" +
IDAHO	Granular Fertilizer	No	No	2"
ILLINOIS	No Preference	No	Yes	2"
INDIANA	No Preference	No	Yes	2"—3"
IOWA	No Preference	No	Yes	None
KANSAS	Either	Seldom	Yes	1/4"—1/2"
KENTUCKY	Inorganic Nit. Granular Fert.	No	Yes	On Surface 1-inch
LOUISIANA	Pelleted Fertilizer	Yes—Cuts, Fills	Yes—Hole Filled	3"
MARYLAND	Inorganic Nit. Granular Fert.	On Cuts, Fills	Yes	1/4" When Seeding
MASSACHUSETTS	Gran.	Yes	Yes	Hole Filled
MICHIGAN	Nitrogen & Granular Fert.	After Grading is Completed	Yes	3"
MINNESOTA	—	—	—	—
MISSISSIPPI	All Sources Specified	Yes—Cuts, Fills	Yes	3"
MISSOURI	No Preference	No	Yes	3"
NEBRASKA	—	—	—	—

engineers and in some instances by landscape engineers. Based on the fertilizer practices now in use by the states it would seem that the feeling that fertilizer-hasn't-been-used-before-for-maintenance-so-why-should-we-use-it-now is a prevailing misconception in highway departments. Granted a few progressive long-thinking departments recognize the value of fertilizer and it is to these people we can point to justify the use of roadside fertilization.

There is no doubt that the educational and promotional job is tremendous, but then so is the opportunity to develop new business.

Photos courtesy American Roadbuilders' Association, U. S. Department of Agriculture and Nitrogen Division, Allied Chemical and Dye Corp.



Here we see a roadside cut that has been mulched with seed-bearing sericea lespedeza hay.

STATE	Fertilizer Designates	Topsoil Prior to Seeding	Topsoil Prior to Treeplanting	Depth of Fert. Incorporated in Soil
NEVADA				
NEW HAMPSHIRE	No Preference	Yes—4"	Yes	2" to 4"
NEW JERSEY	Either	Yes—4"	Yes	$\frac{3}{4}$ Top, $\frac{1}{4}$ Peat
NEW MEXICO	—	None	No	No
NEW YORK	Granular Fert. Pelleted Fert.	4" Where Used	Yes	On Surface
NORTH CAROLINA	No Preference	No	Yes—Hole Filled	3"
NORTH DAKOTA		Sometimes	No	None
OHIO	No Preference	No	Yes—Hole Filled	1"
OKLAHOMA	Pelleted Fertilizer	Yes—Cuts, Fills, Slopes	No	On Surface
OREGON	Inorganic Nit. Granular & Pelleted	5" Lawns 24" Shrubs	Yes	On Surface
PENNSYLVANIA	Granular or Pelleted Fert.	Yes—On Flat Areas	Yes	1" on Slopes 2" on Level
RHODE ISLAND	Organic Nit. 60% or Above	Yes—4"	Yes—Hole Filled	On Surface
SOUTH DAKOTA		Yes	No	On Surface
TENNESSEE	No Preference	Yes—5"	Yes	1"
TEXAS	Granular	Yes	Yes	4"—6" Top
VERMONT	Any	Sometimes	Sometimes	No
VIRGINIA	No Preference	When Available	Yes	3"
WASHINGTON	Organic Nit. Granular Fert.	Yes—Cuts, Fills	Yes	On Surface
WEST VIRGINIA	Inorganic Nit. Pelleted Fert.	No	Yes—Hole Filled	2"
WISCONSIN	Commercial Fertilizer	Yes—3" to 4"	Yes	By Disc and Harrow
WYOMING	None	No	Yes	None



# DEMONSTRATIONS

## Research Plots To

*Here's a County Agent's Story on the Effectiveness of Chemicals. But He Warns Farmers to Use Chemicals. Do They?*

By C. O. CARTWRIGHT

County Agent, Essex County, Mass.

**D**URING MY 16 YEARS of agricultural extension work in Essex county, Massachusetts, no single method has influenced farmers' action as quickly as chemical weed control demonstrations.

Since 1945, when over 100 acres of carrots and parsnips were sprayed with Stoddard Solvent, county farmers have shown a keen interest in selective herbicides.

During the past eleven years 50 result demonstrations have been conducted each year with co-operating farmers.

Don't depend upon the farmer to apply new materials. Of course there is the exceptional farmer who has become a skilled researcher. Not only is the farmer too busy, but also the small amounts of material needed for 1 to 3 gallon applications require accurate measurement. Further, a good result demonstration includes the recording of weed, soil and crop conditions as well as results.

As far as possible demonstration herbicides have been applied by the agent. A few have been applied with tractor equipment after calibration by the agent.

Method, as well as result demonstrations of new and standard materials and calibration and application equipment, are used to attract vegetable, fruit and flower growers to twilight meetings. For these meetings, growers who have a problem with weed control on a variety of crops are best. Remember it is just as important to show growers the shortcomings of a specific herbicide (weeds not controlled, crop injury etc.) as the good points.

Result demonstrations on small areas with selected farmers and other cooperators are essential if the agent is to keep abreast of new materials under his own county conditions. These trials also help to avoid crop losses on large areas sprayed by careless farmers.

The saying that you can't teach an old dog new tricks does not apply to chemical weed control.

Some farmers just won't see results unless actually on their own farm.

A case in point is a farmer who would not use premerge (DiNitros) even though a neighbor within  $\frac{1}{2}$  mile had used them successfully for several years. Pre-emergence demonstrations with DiNitro on corn, beans, peas and potatoes were conducted and a twilight meeting held on this farm. Results were excellent on all crops and this farmer wanted to spray the entire farm the next day when it was too late. In early March, this farmer and his son came to my office for a list of equipment needed for a weed sprayer. That night the father built the spray boom before retiring. Needless to say chemical weed control is a standard practice on this farm.

Market gardeners, florists and nurserymen have cooperated on weed, nematode, poison ivy and soil fumigation. Of the 73 trials conducted this year 37 were on soil fumigation. Both method and result demonstrations were used.

Sagamore Springs Golf Course fumigated  $\frac{3}{4}$  acre of soil for turf grass this fall with Methyl Bromide. This practice resulted from a 300 sq. ft. trial plot fumigated by the agent and the Dow Chemical Company in the fall of 1955.

Field fumigation for nematode control is becoming a regular practice for small fruit nurserymen propagating virus-free strawberry plants. Roger Lewis of Andover has cooperated with the agent in field fumigation using Methyl Bromide, EDB and DD. As with weed control, trials are essential to determine results under County conditions.

Equipment of all types lines my garage wall in the winter time. In early spring the trunk of my car is filled with two 3 gallon tank compressed air sprayers, weed control materials (weighed packages of powder), graduates, applicators, tarps and materials. Two cameras, color and a 4 x 5 speed graphic are in the car available for pictures. While making farm visits suitable sites for demonstrations are observed. A demonstration is discussed with the farmer; if he agrees and conditions are suitable, applications are made on the spot.





## ots To A Selling Tool

n the *Effectiveness of Demonstrations in Getting*  
 Warns *Do Them Right or Don't Do Them at all.*

Each year a detailed report is prepared of all trials including date of application, soil and weather conditions, crop variety, weed size, material, dosage and area covered and results as well as a summary. These are mailed to all cooperating farmers and material suppliers. As a result excellent cooperation has been secured from manufacturers in supplying free materials and application equipment.

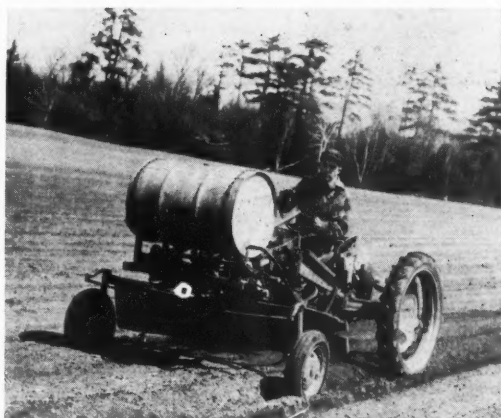
Other methods including the usual circular letter, radio and weekly County Extension News Column have been used to publicize demonstrations and results. Many pictures have been used by four city dailies in spite of the fact that not over 3 per cent of Essex County's 500,000 people are engaged in agriculture.

Colored slides of results, equipment etc. are used at winter and twilight meetings.

Now remember:

- 1) Have clean equipment and materials carefully weighed or measured in handy containers for small applications (1 to 3 gallons).
- 2) Select a suitable site typical of the one to be treated.
- 3) Leave a suitable check plot.
- 4) Record data on weeds (kinds & height), soil, crop and weather conditions as well as date, dosage, material.
- 5) Measure and stake off sprayed area and check plot.
- 6) Label with suitable signs and record row numbers etc. so you can locate plots easily on your next visit.
- 7) Visit demonstrations at least two times at correct intervals (varies with herbicide used) to check results.
- 8) If possible have farmer present and discuss results with him.
- 9) If used for twilight meeting or tour use large signs and label each one including date of application, material and rate per acre.
- 10) Point out failures and crop damage as well as good points of herbicide used. Have labeled container of material for growers to see.

MAY, 1957



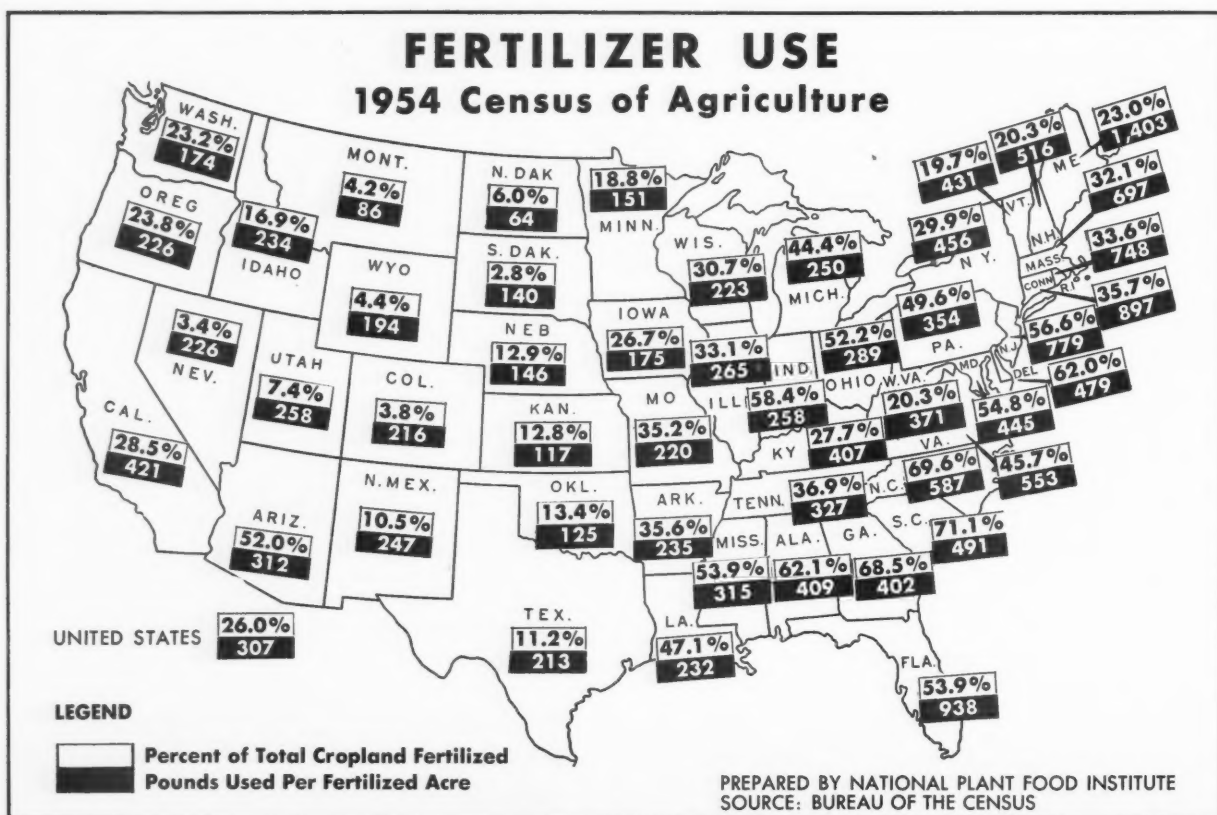
# A Second Look at 1954 Fertilizer Usage

A SECOND LOOK AT THE CONSUMPTION FIGURES FOR 1954 SHOWS THAT MORE FERTILIZER SHOULD HAVE BEEN USED AND EMPHASIZES THAT THERE IS STILL A LARGE UNTAPPED FARM MARKET FOR FERTILIZER.

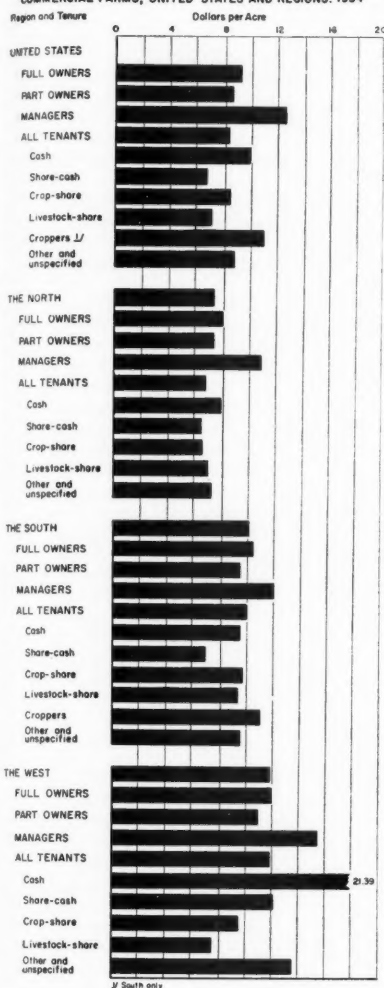
IT MAY have been the infamous "cost-price" squeeze, or maybe the wrong sales techniques, but whatever it was, a lot of fertilizer wasn't sold in 1954 that should have been. This is dramatically pointed out in the 1954 Census of Agriculture recently released by the Bureau of Census.

According to the Census report:

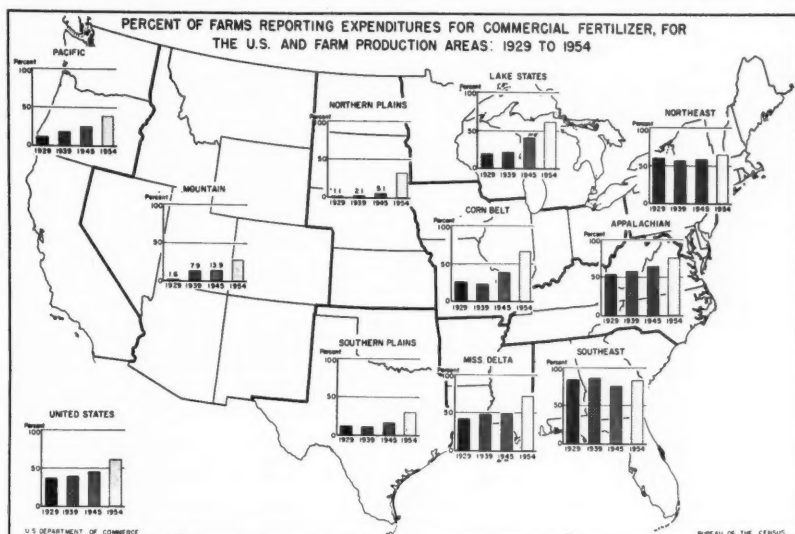
- ▶ Only about 2.3 million farms in the U. S. reported using fertilizer in 1954.
- ▶ Only about 26 per cent of the total cropland including improved pasture was fertilized.
- ▶ Average application of fertilizer per fertilized acre was only 307 pounds.
- ▶ Of the various crops surveyed, tobacco and sugar beets led the list in per cent of acres fertilized with



AVERAGE EXPENDITURE PER ACRE FOR COMMERCIAL FERTILIZER AND FERTILIZER MATERIAL, BY TENURE OF OPERATOR, COMMERCIAL FARMS, UNITED STATES AND REGIONS: 1954



Illustrations courtesy of National Plant Food Institute.



97 per cent and 90 per cent respectively. Sixty per cent of the corn was fertilized and 55 per cent of the cotton.

► Total farm expenditures for fertilizer during 1954 were \$1,024,105,000. This does not include expenditures by home owners or such users as golf courses, parks, highway right-of-ways, etc.

Another interesting highlight from the Census report is although farms selling products valued at more than \$5000 constituted only 20 per cent of the total number of farms in the U. S., they consumed nearly 63 per cent of all fertilizer used that year, and accounted for 65 per cent of the fertilized land.

Actually these figures point up the fact that farmers in 1954 didn't break any of the rules. Historically a farmer will cut fertilizer purchases in times of declining farm prices—and 1954 was a year of declining prices.

He did this in face of the fact that cutting fertilizer usage was probably the most damaging thing he could do. By doing so he produces a smaller volume

of goods and makes less profit on each unit he does produce. Thus his profits collapse from two directions.

But we can't be too hasty in jumping on the farmer, because maybe he "just didn't understand the situation." I doubt that he has yet been told the full story of plant food benefits the way he wants to hear it. And if we are going to utilize this market potential, telling the story of plant food benefits in such a way that fertilizer usage increases will be a major task for the industry. It is important not only from the standpoint of the fertilizer business, but also with regard to the welfare of the farm customer.

The best sales argument for using fertilizer is its dollars and cents return. When fertilizer is used efficiently the economic argument is most spectacular and persuasive. The extent to which this story is told will determine almost, how much fertilizer is sold and help not only the industry, but the farmer and all those who deal directly or indirectly with him.

# USE AND EXPENDITURES FOR FERTILIZER AND LIME

1954 Census of Agriculture

State	FERTILIZER				LIME			
	Farms Reporting Use of Fertilizer	Percent of Total Cropland Fertilized <sup>1</sup>	Pounds Used Per Fertilized Acre	Dollars Spent for Fertilizer	Farms Reporting Use of Lime	Percent of Total Cropland Limed <sup>1</sup>	Pounds Used Per Acre	Dollars Spent for Lime
				Thousands				Thousands
Alabama	89,346	62.1	409	35,036	5,209	3.0	1,807	1,001
Arizona	3,074	52.0	312	12,267	13	(a)	1,721	4
Arkansas	67,174	35.6	235	20,790	2,878	0.9	2,986	419
California	40,956	28.5	421	62,364	1,770	0.5	3,842	797
Colorado	8,981	3.8	216	3,869	66	(a)	1,596	6
Connecticut	4,545	35.7	897	4,169	2,406	8.9	2,168	303
Delaware	4,063	62.0	479	3,788	1,345	9.6	1,605	299
Florida	28,429	53.9	938	49,550	6,095	10.8	1,598	2,717
Georgia	94,536	68.5	402	50,202	11,750	4.0	1,512	1,473
Idaho	16,361	16.9	234	8,316	—	—	—	—
Illinois	104,142	33.1	265	57,093	40,614	4.7	4,469	8,447
Indiana	101,323	58.4	258	58,264	37,718	6.3	3,976	4,990
Iowa	111,004	26.7	175	46,771	30,422	2.7	4,230	4,535
Kansas	45,883	12.8	117	18,281	7,127	0.6	3,975	1,055
Kentucky	107,617	27.7	407	25,598	23,656	5.9	3,683	2,828
Louisiana	52,279	47.1	232	17,370	1,845	1.6	1,904	402
Maine	8,145	23.0	1,403	10,054	3,035	5.1	1,422	222
Maryland	19,537	54.8	445	12,371	8,044	10.6	1,887	1,771
Massachusetts	6,097	32.1	697	3,197	2,350	6.2	2,334	248
Michigan	81,041	44.4	250	31,163	12,078	2.2	3,943	1,438
Minnesota	72,466	18.8	151	22,975	11,580	0.9	3,947	960
Mississippi	138,241	53.9	315	36,873	4,924	2.6	1,727	900
Missouri	98,473	35.2	220	43,236	28,346	3.8	4,312	4,183
Montana	6,027	4.2	86	2,186	40	(a)	730	1
Nebraska	41,984	12.9	146	21,378	5,868	0.7	3,602	1,275
Nevada	381	3.4	226	253	6	(a)	7,647	1
New Hampshire	2,444	20.3	516	810	996	4.9	2,276	93
New Jersey	10,781	56.6	779	11,564	5,216	11.4	1,804	992
New Mexico	2,927	10.5	247	2,359	2	(a)	2,966	4
New York	56,088	29.9	456	26,247	23,830	5.2	2,996	3,634
North Carolina	174,474	69.6	587	64,517	21,505	4.1	1,867	1,632
North Dakota	9,924	6.0	64	4,509	13	(a)	857	—
Ohio	110,820	52.2	289	49,333	40,502	6.4	3,702	5,948
Oklahoma	24,735	13.4	125	6,731	1,733	0.4	2,606	259
Oregon	17,483	23.8	226	11,375	1,369	0.4	3,000	322
Pennsylvania	70,395	49.6	354	28,970	33,611	9.0	2,714	4,496
Rhode Island	566	33.6	748	307	192	6.4	2,045	26
South Carolina	70,143	71.1	491	31,849	4,348	3.2	1,744	606
South Dakota	10,359	2.8	140	3,191	111	(a)	1,371	3
Tennessee	107,945	36.9	327	23,738	8,153	1.6	3,195	667
Texas	63,215	11.2	213	28,594	1,236	0.1	1,818	209
Utah	5,650	7.4	258	1,515	41	(a)	1,049	1
Vermont	7,498	19.7	431	2,130	4,114	5.3	2,334	298
Virginia	63,274	45.7	553	26,400	14,082	6.3	2,725	1,850
Washington	19,003	23.2	174	13,924	1,223	0.3	2,377	277
West Virginia	13,865	20.3	371	2,393	5,304	5.3	3,612	466
Wisconsin	99,098	30.7	223	25,243	34,077	4.1	3,882	2,962
Wyoming	2,169	4.4	194	992	7	(a)	1,321	2
UNITED STATES...	2,294,961	26.0	307	1,024,105	450,850	2.2	3,328	65,022

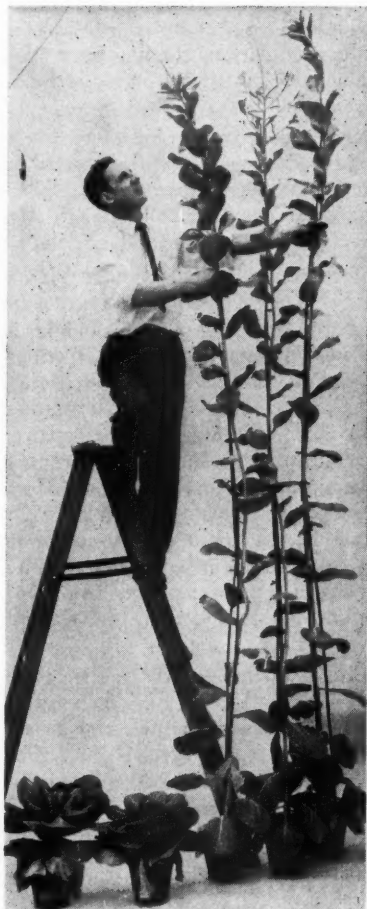
<sup>1</sup> Includes total cropland and cropland pasture, plus improved pasture. Improved pastures includes pasture where one or more of the following practices had been followed: liming, fertilizing, seeding to grasses or legumes, irrigating,

draining, or controlling weeds or brush.

(a) Less than 0.05%.



By S. H. WITTWER  
Professor of Horticulture  
Michigan State University



# GIBBERELLINS

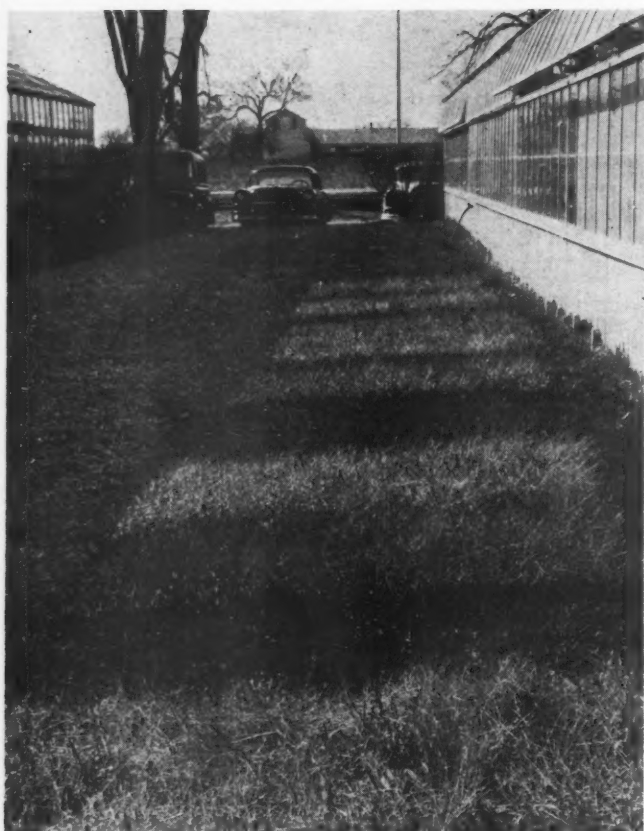
## New Chemicals For Crop Production

**W**HAT may well be the most important chemical find in 25 years is now attracting the attention of American farmers. A year ago chemicals known as gibberellins, of which gibberellic acid is a member, were unknown in this country except by a few isolated groups of research workers. Even they little realized the vast potentiality and versatility that these chemicals might have for large segments of the plant kingdom. It is now believed that the agricultural impact of the gibberellins will equal or exceed that of DDT or 2,4-D. Their introduction and currently wide national distribution is unparalleled in the history of agricultural chemicals. Virtually no field testing has been done. Even scientific observations are still preliminary.

The discovery of gibberellin goes back to 1926, when a Formosan phytopathologist, Kurasawa, be-

came curious about a peculiar fungus (*Gibberella fujikuroi*) disease that affected rice in Japan and elsewhere in the Orient. He noticed that the first symptom of infection was a greatly accelerated growth rate. The diseased seedlings became taller than the healthy ones. Kurasawa made sterile culture filtrates of the fungus and found that when they were sprayed on rice seedlings, they reproduced the same overgrowth as that caused by the disease.

This touched off a line of research that has continued at an accelerated rate ever since. Early attempts by Kurasawa and others to isolate the active principle failed. Not until 1938, after 12 years of concerted effort by a team of research workers at the University of Tokyo, was the plant growth-stimulating substance finally isolated. It was given the name "gibberellin A" (Jour. Agr.



Gibberellins promote earlier growth of grass in the spring. Plots in picture starting in the front and going toward the back were treated with the following amounts of gibberellins per acre, 25 days before photographing: 10, 0, 1, 10, 1/10, 0, 1, 0, 10, 1, 1/10, 10, 0, 1, and 1/10 ounces per acre. Photographed April 1, 1957.

Chem. Soc. Japan 14:1526 (1938)). Its potency was striking. One part in a million doubled or tripled the growth rate of rice, barley, wheat, tobacco and cucumbers.

This interesting Japanese work at first aroused little interest among plant scientists in America and Europe. It was 1950 before any work on gibberellins outside of Japan was reported. Mitchell and Angel of the U. S. Army Chemical Corps Biological Laboratories at Camp Detrick in Maryland then published two brief abstracts (*Phytopathology* 40:872 (1950) and 41:26 (1951)). Attempts by Mitchell and Angel to prepare pure gibberellin failed.

Two groups of biologists and chemists, one of Imperial Chemical Industries in England, the other of the Northern Regional Research Laboratories, U. S. D. A. in Peoria, Illinois then, independently, made the story clear. Gibberellic acid, chemically related, but biologically identical to the Japanese gibberellin A was isolated in England (*Chem. and Ind.* 1954, p. 1066), and gibberellins A and X were isolated in the United States (*Arch. Biochem. and Bioph.* 54:240-245 (1955)). Gibberellin X and gibberellic acid have since been shown to be identical.

Gibberellins are now produced commercially by

culturing the organism in stirred vessels in much the same way as for the fermentations involved in the production of antibiotics, such as penicillin or streptomycin. They represent a new type growth regulator with many biological properties unlike those of any other chemical. Their effects are not limited to plants of a few botanical families, but include many economic plants. Indeed, there are few plants which are not affected. They are effective when applied in a water solution as a foliage spray or as a droplet to the growing tip in concentrations ranging from 1 to 1000 ppm, and they may be fed through the roots or applied as seed treatments.

Several economically important physiological responses may be induced in plants with gibberellin that heretofore have not been subject to chemical regulation. The discoveries which follow, with two exceptions, (1) and (2) can be credited largely to American investigators. The first goes to the Japanese, and the second to the English.

(1) Dwarfism, both genetic and physiologic is overcome. Dwarf peas assume normal growth rates and grow as tall varieties, bush beans develop twining vines and grow like pole types, and dwarf tomatoes are invigorated to grow and flower more rapidly. Doses as small as 0.01 micrograms per plant may produce visible responses within 48 hours. Most effects of gibberellin on dwarf plants result from an increase in internode length, mainly attributable to cell extension. Such increases in stem length may be of value only with a few crop plants grown for fiber, such as flax and hemp, and with forest trees.

(2) Substantial increases in yield and dry matter of some crops is a reality with as little as one ounce per acre. Grass has given a consistent increase in yield, if adequate fertilizer accompanies the use of gibberellin. Promotion of earlier growth and productivity of pasture grasses is described in detail in Australian Patent No. 10190 (1955), *Nature* 178:1356 (1956), and *Science* 125:494 (1957). Lawn grasses in Michigan in early spring were stimulated to grow by application of one ounce per acre at temperatures considerably lower than those at which growth would have normally occurred.

Fresh and dry weights of celery and parsley have been increased by 55 per cent within 2 to 3 weeks after application of 10 to 1000 ppm of gibberellin as a foliage spray. Repeated tests with celery showed that all increased growth occurred in the tops, with little or no difference in root growth. In Michigan maturity of celery may be hastened by 15 to 25 days.

While the effects of gibberellin on plant growth are striking, the flowering effects may prove far more significant.

(3) Flowering and normal seed production in many cold requiring biennials has been hastened. Cabbage, carrots, beets, kale, collards, turnips, rutabagas, and several flower crops have thus far responded. For many high cost greenhouse flower crops, for breeding of new varieties, and as an aid in seed production, gibberellin will undoubtedly prove of great value.

(4) Gibberellin causes long day plants to flower

when grown under short photoperiods. Vegetable crops in this category which have flowered in short days include lettuce, endive, radish, spinach, mustard, Chinese cabbage and dill. The same crops treated with gibberellin and grown under long days flowered several weeks earlier. Petunias, stocks and pansies flowered from 1 to 5 weeks earlier following a single foliar spray of 10 to 1000 ppm.

The numerous responses of plants to gibberellin are revealed by the following, which also may result from treatment with other chemicals:

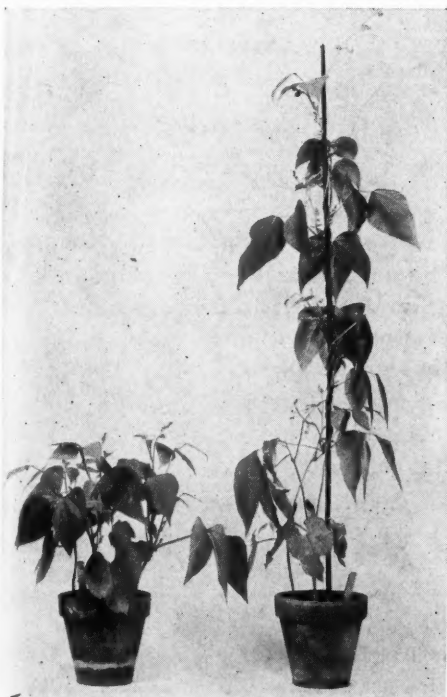
(1) Fruit setting in the absence of pollination has been achieved in the tomato and cucumber. Spray solutions of 10 to 100 ppm applied to the flowers promote normal fruit growth with no injury to the foliage.

(2) Dormancy may be broken in many plants. Gibberellin has caused immediate sprouting of freshly harvested dormant potato tubers. Epicotyl dormancy in apple, peach and seeds of certain ornamentals has been overcome. This may allow the nurseryman to eliminate "after-ripening" or "cold stratification" seed treatments in the propagation of many plants.

(3) Seed treatments promote earlier emergence and better germination in peas and beans. Seeds may be soaked overnight in weak (10 to 25 ppm) solutions, or the gibberellin may be applied in a dust or slurry (1000 ppm).

While gibberellins have produced remarkable

Comparative growth and flowering of an early market bean (var. Contender) 31 days after seeding. Left: Control (no treatment). Right: Growing tip treated with 20 micrograms of gibberellins after the primary leaves unfolded. (Comparable results were obtained by spraying the foliage with 10 ppm of gibberellin solution).

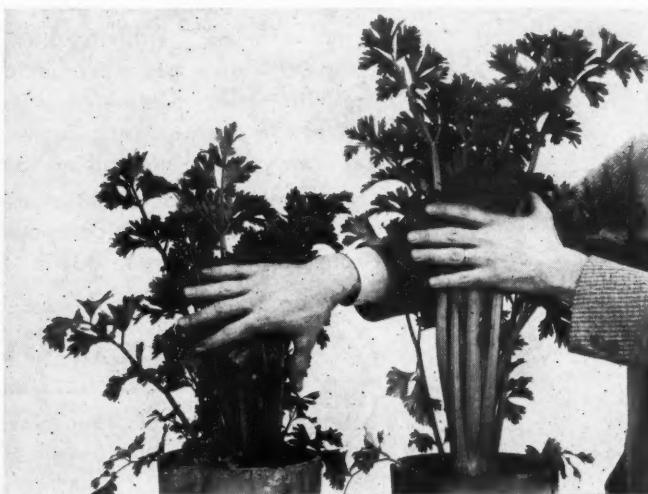


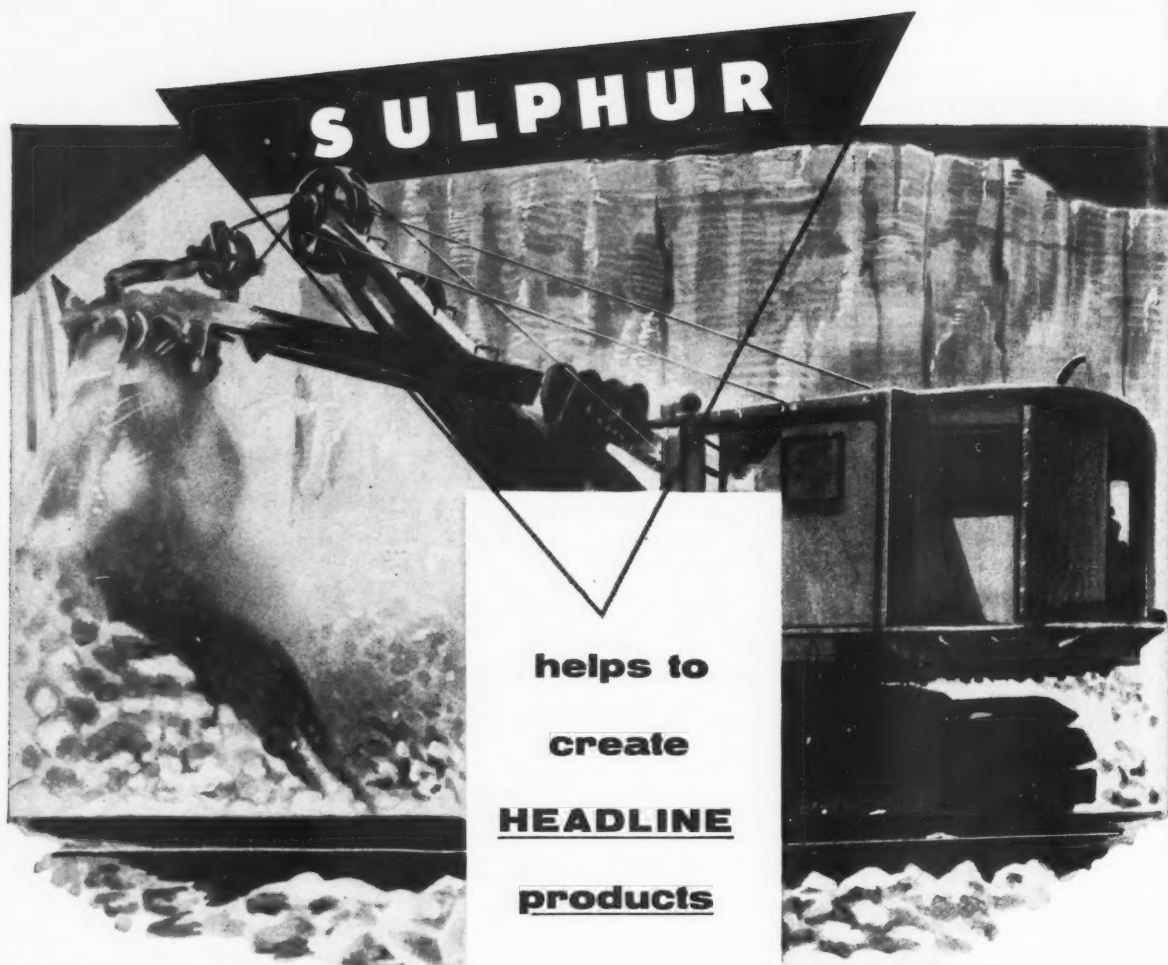
effects which speed up production, flowering, and maturity in a wide variety of crops, there is much to be learned in their use. Detailed studies of the effects on market, storage and nutritional quality have not been performed. Possible harmful effects as residues on food crops needs careful checking, although there is no evidence as yet to justify concern. Many factors also affect plant response. The most desirable effects on vegetative growth, flowering, maturity, and fruit setting occur under the best conditions of temperature, sunlight, and mineral nutrition. Top yields of treated crops will result only if adequate fertilizer, especially nitrogen is supplied. This has already been proved with pasture and lawn grasses, celery, pineapple and sugar cane.

And, what of the future? Of the major crops, results with cotton, sugarcane, pineapple, and tobacco look promising. For others, including wheat, corn, oats, barley, sugar beets, soybeans and potatoes, treatment of seedlings with gibberellins does not increase yields, and in grain crops weakens the stems, and may induce severe losses from lodging. In the north grass crops for pastures and turf will be induced to grow weeks earlier in the spring and later in the fall. The northern boundary for production of some crops will be extended and, because of its control of dormancy, the boundary for many deciduous fruits could be moved south. Chemical control of flowering in many crops heretofore regulated only by temperature and daylength is now possible. This will broaden the areas wherein many flower and seed crops may be grown successfully.

Gibberellins will undoubtedly be widely used this year as a novelty by the amateur gardener, and conservatively by commercial growers for improving productivity and earlier maturation of many high value seed, flower, vegetable, fruit, and nursery crops.

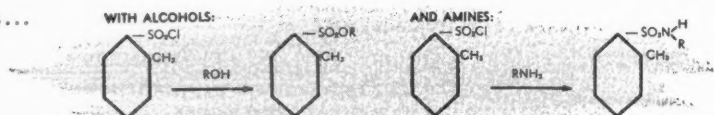
Effect of gibberellins on the growth of Utah 10-B celery (green Pascal type). Left: Control (no treatment). Right: Plant sprayed with 100 ppm solution of gibberellins four weeks prior to photographing. Note the petioles are longer and thicker and the stalks are free from suckers. It appears that gibberellins may enable celery growers in Michigan to market their crops 2 to 3 weeks earlier.





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TYPICAL REACTIONS . . .



Industry has a new working tool in *o*-Toluenesulfonyl Chloride. This 98% pure ortho isomer can be used in building molecules for use in a wide variety of new products, from dyestuffs to pharmaceuticals; from plasticizers to herbicides. It is even possible that it is now being used in products you are making or have recently acquired.

From the chemical name of *o*-Toluenesulfonyl Chloride it is obvious that sulphur is a component of this compound . . . added evidence of the important role Sulphur plays in our industrial economy.

*\*Product of Monsanto Chemical Company*



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FARM CHEMICALS



## FARM CHEMICALS

### Equipment & Supplies

#### A&S WELDED SEAM MULTIWALL BAG

Arkell and Smiths announces it now is producing a new "welded seam" multiwall bag.

The "welded seam" is an extrusion of molten polyethylene upon Kraft paper, in multiwall bags with polyethylene coated liners, which results in tight adhesion between the two in the seam of the bag. The manufacturer claims the seam of the bag is as impervious to chemicals as polyethylene itself.

For more details

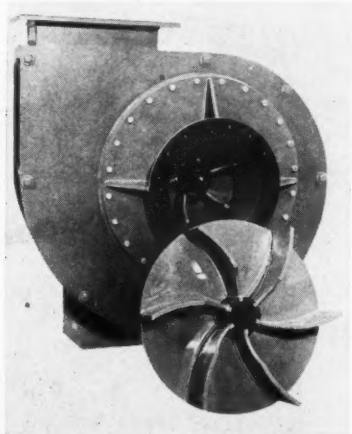
CIRCLE 148 ON SERVICE CARD

#### NEW POLYVINYL CHLORIDE FAN FOR CHEM. INDUSTRY

Specially constructed of polyvinyl to resist corrosion in moving chemically laden air or gases, the new centrifugal, non-overloading radial bladed fan from Chicago Blower Corp. is reported to be the first of its kind in industry.

All parts exposed to the airstream are made of corrosion-proof, unplasticized polyvinyl chloride, including blades, scroll, wheel hub and wheel back plate.

Designed for floor, platform or roof mounting, the PVC fan is



available in several belt driven sizes ranging from 12 inches to 40 inches in diameter. Performance ranges from 200 to 10,000 CFM, at pressures up to 6" S.P. and from 1/4 to 10 H.P. at temperatures to 150° F. depending on fan diameter.

For complete details,

CIRCLE 149 ON SERVICE CARD

#### CONTAINER STAPLING CORP. INTRODUCES MODEL TAP-A

Any style corrugated or fibre board box can be stapled top or bottom with the Model TAP-A stapler from Container Stapling Corp. It is equipped with one stapling head, air operated with fully pneumatic controls.

The air valves are operated by completely mechanical means, and the machine is fully equipped with air filters, regulators, lubricators and gauges. The head may be rotated 90° to drive staple parallel to carton edge, instead of across center seam, by simply loosening hex nuts located on actuating cylinder support arms.

Weight of the stapler is 145 pounds, overall height is 73 inches, and it requires 22" x 24" of floor space.

For details on the TAP-A

CIRCLE 150 ON SERVICE CARD

#### MONITORING GAS AND VAPOR MIXES ON-STREAM

The Beckman Industrial Gas Chromatograph continuously monitors process streams, reporting the concentration of key components as often as once every five minutes.

It is adaptable to virtually any process stream that can be vaporized into a mixture of gasses. Beckman Instruments reports it can be used to monitor inorganics such as oxygen, nitrogen, chlorine or sulfur dioxide or it can be used

to analyze complex hydrocarbon streams containing saturates; unsaturates or aromatics, in any concentration from 100 per cent down to less than 1 per cent.

If you would like more information on the Model 220 Gas Chromatograph,

CIRCLE 151 ON SERVICE CARD

#### FEATURES & REFINEMENTS OF NEWEST KRAFTPACKER

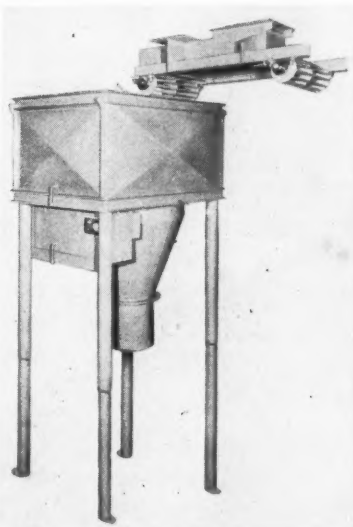
There are a dozen or more new features and refinements in the newest Kraftpacker Automatic Open Mouth Bag Filling Machine—including heavier gauge steel construction, individually adjustable tubular legs, reinforced contact points, removable and adjustable filling spout, removable endless feeder conveyor belt, enclosed solenoids and hinged bagging cone. Sales agent for the Kraftpacker is Kraft Bag Corp.

The Kraftpacker model accommodates weights from 25 to 200 pounds. It requires a minimum head of material to maintain accuracy and, in operation, preweighs material to within 4 oz. plus or minus, even on speeds up to 24 charges a minute.

In addition to the standard model, in which the legs and principal working parts are made of 12 gauge steel, Kraftpackers may also be ordered in stainless steel construction.

Complete particulars are included in a new illustrated brochure just released. Get yours by

CIRCLE 152 ON SERVICE CARD



## Amazing Plant Growth Discovery

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## Makes Plants Grow Faster and Bigger Than Ever Before Possible

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2. Size and bulk are greatly increased.
3. Blooms are heavier, and yields are higher.
4. Grasses grow faster, more luxuriantly than with fertilizer alone.
5. Flowering time is advanced—certain biennials bloom in the first year, some annuals bloom as much as five weeks earlier.
6. Seeds are produced earlier, in as little time as six months in such plants as carrots and head lettuce.
7. Dormancy is broken. The requirements for rest period, cold treatment, or variable day length are often by-passed completely.
8. Plants are not set back after transplanting.
9. Fruit set is improved.

**GIBREL** is the first of the gibberellins to be produced on a commercial scale. It is ready for immediate use in your formulations. Completely unrelated to fertilizers or nutrients, this Merck-developed gibberellin salt is making headlines with its indicated uses in flowers, ornamentals, turf grasses, and trees. Extensive tests indicate phenomenal results in food and forage crops. Chronic toxicity studies, however, have not yet been completed. Therefore, recommendations for use on such crops must await final results of these tests.

### GIBREL for Higher Profits

You can start building profits right now with products containing GIBREL. And you can count on Merck—the first basic producer of a practical gibberellin—to assist you with technical and marketing problems.

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### GIBREL Heavily Advertised

Merck promotion is pre-selling GIBREL to your customers through a heavy national advertising and promotion campaign. In addition, Merck research is continuing its program to get additional uses for GIBREL. As always, Merck technical service is prepared to aid you in developing your new product, or in adding GIBREL as an ingredient to your present formulation.

### GIBREL Easily Formulated

You may use GIBREL in aerosols, powders, and other dry formulations. GIBREL may be present as the only active ingredient or combined with soluble nutrients. Dry GIBREL is stable, readily soluble in cold water, and noncorrosive.

### GIBREL Now Ready for Shipment

Merck supplies GIBREL in  $\frac{1}{4}$  and  $\frac{1}{2}$  lb. containers, and as a 10 per cent pre-mix in  $2\frac{1}{2}$  and 5 lb. containers. For technical data, prices, or samples of GIBREL, call, wire, or write—

Merck & Co., Inc., Chemical Division, Rahway, N. J.

\*GIBREL is the trademark of Merck & Co., Inc. for its plant growth substance.

**GIBREL®—a product of MERCK**

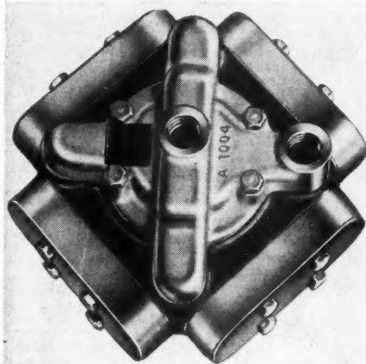


**MERCK & CO., INC.**  
CHEMICAL DIVISION  
RAHWAY, NEW JERSEY

### SPRA-WHITE OFFERS HI-PRESSURE PUMP

A new hi-pressure utility pump is now being offered by Spra-White Chemical Co., Inc.

The four-cylinder radial pump, with direct drive, is available with



all Spra-White sprayers, and is also said to be ideal for mounting on jeeps, tractor or truck power-take-off shafts. Among its applications are for orchard spraying, weed and insecticide spraying, fire fighting and cleaning equipment.

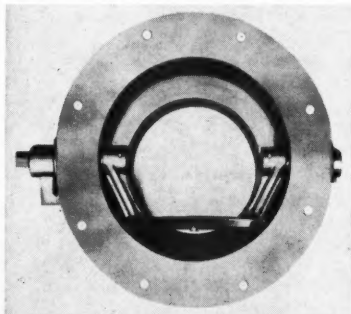
Full information and literature are available.

CIRCLE 153 ON SERVICE CARD

### DUST-TITE VALVE FOR DRY MATERIALS

A versatile dry materials valve for use in blenders, feeders, conveyor systems, pipes and the like is guaranteed by its maker, General Machine Co. of N. J. to be dust tight and self-cleaning.

Trade-named the Gemco Dust-Tite Valve, it affords a new approach and a new principle for a valve, says the company. One



section of sphere passes inside another sphere, with no clearance—there is no room for particle size to get between the two spheres. This action takes place with each opening and closing of the valve. General Machine reports that this principle has eliminated 95 per cent of the valve trouble with dry materials.

Gemco spherical valves are available in 2 inch to 20 inch standard sizes. For more information

CIRCLE 154 ON SERVICE CARD

### CHEMICAL-RESISTANT CEMENT FOR PROCESS AREAS

Haveg Industries Inc. has developed 7010 cement for use with brick and tile tank linings and for laying floors and walls in chemical processing areas. This polyester cement resists a wide range of chemicals, including both acids and mild alkalis at high temperatures and concentrated alkalis at room temperature. It also has exceptional resistance to oxidizing agents.

Two packages are supplied—one contains a liquid resin, the other a free flowing powder. A technical bulletin is available.

CIRCLE 155 ON SERVICE CARD

## Suppliers' Briefs

**Chase Bag Co.** has completed a new building adjoining its plant in Portland, Ore. The structure will be used to store materials for use in Chase packaging products and also will house some manufacturing operations.

**Clark Equipment Co.** has named the following new dealers to sell and service the fork-lift trucks, straddle carriers and powered hand trucks produced by its Industrial Truck Div.: Dues and Dueber, Inc., Dayton, Ohio; W. E. Johnson Equipment Co., Miami, Fla.; and J. A. Kraatz Corp., Pawtucket, R. I.

**Dorr-Oliver Inc.** recently broke ground for construction of new \$2½ million headquarters in Stamford, Conn. Located on an 18 acre landscaped tract, the new building will provide 120,000 square feet of office space for the

### POWER DRIVEN CURVE CONVEYOR

A new low-cost power-driven curve conveyor conveys bags, cartons, bundles or packages around turns of any length under power, reports its manufacturer, Power-Curve Conveyor Co. Compound curves can be supplied as well in this spring-steel belt type conveyor.

Standard widths are 18", 24" and 32", with one belt roller for each 10° of curvature. Only seven inches of headroom is required, with no take ups or return idlers and no special head or tail pulleys, Power-Curve reports.

### SPRAYING SYSTEMS NEW GUNJET NO. 18

Spraying Systems Co. now is marketing a new high-pressure spray gun for use at all pressures up to 800 psi. It offers complete adjustability of spray from finely atomized cone spray to solid stream, by a 180 degree rotation of the Gunjet handle, the firm reports.

It is made in aluminum with hardened stainless steel orifice discs.

estimated 550 home office staff members of the worldwide engineering organization. Target date for occupancy is May 1, 1958.

**Link-Belt Co.** will build a new \$5 million bearing plant in Indianapolis to replace and increase by 50 per cent the capacity of its present Dodge bearing plant, the firm has announced. Construction will begin this year and is expected to be completed in 1958.

Expansion of the Cedar Rapids, Iowa plant also was announced by Link-Belt President Robert C. Becherer.

**Pittsburgh Plate Glass Co.** recorded a new high in sales during 1956 and achieved its second best year in earnings, according to its annual report. Total consolidated sales of \$596,573,825 were 2.5 per cent above the 1955 record. Net earnings of \$55,381,729 were 9.9 per cent under 1955 earnings.

**Rockwell Mfg. Co.** has acquired the assets of Republic

Flow Meters Co. of Chicago, Willard F. Rockwell, Jr., president of the firm has announced. Present management of Republic will remain unchanged, Rockwell said, with James D. Cunningham continuing as president.

**Yale & Towne Mfg. Co.** Construction is reported to be underway on a new \$4 million Yale materials handling equipment manufacturing plant and mid-continent parts depot in Forrest City, Ark.

**Witco Chemical Co.** has moved its Mid-Western regional sales headquarters to new, larger offices in the same building at 75 E. Wacker Drive, Chicago, Ill. Sales headquarters of Emulsol Chemical Div., formerly at 59 East Madison St., will also be moved to the new quarters.

**FOR SALE:** Ribbon Mixers 56 to 336 cu. ft.; Hammer Mills 20 to 75 HP; also glass lined tanks, dryers, etc. Perry Equipment Corp., 1430 N. 6th St., Philadelphia 22, Pa.

## CLASSIFIED ADVERTISING

### NEW RATES...

Help wanted, positions wanted, used machinery and business opportunities are now charged at only 10 cents per word, \$2.00 minimum. Count box number as five words.

**Display ads . . . \$15.00 per column inch, minimum of one**

inch. Ads over the minimum are accepted only in multiples of one half inch.

For prompt results, send your classified ads to Farm Chemicals, 317 N. Broad St., Philadelphia 7, Pa.

Closing date: 10th of preceding month

### FOR SALE

**FOR SALE:** Aluminum Storage Tanks 2700 gal. to 23,000 gal. capacity. Perry Equipment Corp., 1430 N. 6th St., Phila. 22, Pa.

**USED TANKS** for chemical or acid storage. 3—10,000 Gal. tanks  $\frac{3}{4}$  in. thick. A.S.M.E. code. Working pressure 200 lbs. Welded and Riveted. 4—3,000 Gal. tanks  $\frac{3}{4}$  in. thick. All Welded construction. Plenty of Openings. Call or write R. R. Jones Oil Company, Coshocton, Ohio, Box No. 182. Phone 2113W day or nite.



Projects, consultation and production control services in Biochemistry, Chemistry, Bacteriology, and Toxicology. Insecticide Testing and Screening. Mineral Analyses including fluorine determination. Write for price schedule.

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Madison 1, Wisconsin

**WISCONSIN ALUMNI RESEARCH FOUNDATION**

## EXPERIENCED AGRONOMIST AVAILABLE

• **Currently:** Division Mgr. Barahona Estate, independent affiliate West Indies Sugar Corp. Restricted crop Barahona '56: 580,000 tons cane. 1,700,000 lbs. coffee. Company-owned harbor. *Leaving because estate bought by Dominican company for only Dominican employees.*

• **Previous experience:** In Dominicana, for West Indies Sugar Corp.: Mgr. Consuelo and Quisqueya Estates, asst. Div. Mgr. cane-fields, asst. to Gen. Mgr. and V. P. Dominican Div. In Java prior to War as: mgr./supt.: Redjo-agoeng, Manishardjo, Bandjaratma and Kanigoro.

• **War Record:** Bomber pilot Dutch East Indian Airforce. POW in Japan.

• **Languages:** Speak, read, write: English, Spanish, Dutch, German, French. Speak and read: Malay, high/low Javanese.

• **Nationality:** Netherlands. Married to American citizen.

• **Education:** Grad. Agr. Chemist/Engineer, Wageningen University, Holland. Excellent Health.

• **Address:** Mr. Jan Jongsma, Ingenio Barahona, Dominican Republic. Please send copy of inquiry to New York address: c/o Mr. Crane Haussamen, 247 Park Avenue.

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Patent Pending

**LIQUID FERTILIZER**

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**NEW ADVANCED 10-20-10  
FORMULA — 40% NUTRIENTS**

### OTHER FERTI-LIQUID FEATURES:

- Non-corrosive — use safely with any type spray (tractor, jet, boom, or aerial) . . . ties-in with insecticidal, fungicidal, herbicidal spray programs
- Unexcelled for leaf feeding — seed treating — transplanting
- Follows the recommended 1-2-1 Nutrient Ratio
- Most economical on a Plant Food (Nutrient) basis

**185**  
per gal.  
del. in  
5-gal.  
drums

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# PEST REPORTS

## BOLL WEEVIL SURVIVAL BELOW '56

**W**OODS trash examination conducted recently by co-operating Federal and state workers in several states shows in most areas that the number of live weevils that survived the winter are below the number in last year's survival survey. The only two states recording higher counts this year are Georgia and Virginia.

Due to a change in designation, in the fall of 1956, of areas to be sampled comparison of all sections cannot be given. Certain areas, however, can be compared to give an idea of the problem to be expected. Madison parish, Louisiana, has a survival count of 1,937 live boll weevils per acre this spring compared to a count of 3,654 in the spring of 1956.

To caution against complacency though, it should be pointed out that, in the last 21 years, the count of 1,937 has been surpassed in only three previous years: 1950, 1955 and 1956. The average for the four areas examined in the state of Louisiana this spring was 1,175 live weevils per acre or 67 per cent of the number found in hibernation last fall.

Per cent survival in Mississippi was considerably lower than in Louisiana. The north delta had the lowest survival, 350 weevils per acre of trash for 14 per cent survival. The hill section had the highest rate of survival, 34 per cent or 565 weevils per acre.

Florence county, South Carolina, recorded a survival count of 1,236 weevils per acre of trash as compared with 4,646 in the spring of 1956. The per cent survival was 21 which was the lowest per cent survival on record and the number of weevils was the lowest except for 1940, 1944 and 1956, since spring hibernation

surveys were started in the county.

Although the per cent survival in southeastern Virginia was only 29, the number of live weevils found this spring was 1,210 per acre of trash. Last spring, the counties of southeastern Virginia had an average of 85 surviving weevils per acre.

Georgia recorded the largest average number of weevils surviving the winter since the spring of 1953. The average number of live boll weevils found this spring in Georgia was 1,036 per acre of surface trash. This was 54 per cent survival and compares with a count of 390 live weevils in the spring of 1956. Twenty-nine of the 50 fields examined were found infested and the maximum number of live weevils found per acre was 13,068.

At Waco, Texas, where boll weevils are collected in the fall and placed in cages located in a wood lot, winter survival observations were begun in March. Five-hundred weevils were placed in each of 10 cages and activity in March 1957 was 4.2 weevils per inspection. Weather during the 1956-57 winter was mild and survival might be expected to be comparable with that of 1954, 1953, 1952, 1950, 1946, 1945 and 1944 but probably less than that of 1955 and 1941 when survival was extremely high. The number of weevils which entered hibernation in the fall were in fewer numbers, however, than normal for the area as conditions were unfavorable for heavy late season build-up.

Inspections to determine the survival of pink bollworms were conducted in several areas during the month of March. In the

*Presented in cooperation with  
the Economic Insect Survey  
Section, Plant Pest Control  
Branch, Agricultural Research  
Service, USDA.*

southern area of Texas inspection of surface debris showed a much lower number of live pink bollworms than last spring. In El Paso, where economic damage occurred in 1956, mortality was found to be high.

Inspection of standing stalks and surface debris in the eastern part of the Lubbock district and in the San Angelo district, both in west Texas showed considerable numbers survived the winter. Limited inspection in Cottle county, Texas, indicated that large numbers of the pest were in hibernation. Inspections of stalk and debris in 16 Oklahoma counties were made on 162 fields. Twenty infested bolls from standing stalks and four from surface debris showed six live and 23 dead larvae from the standing and one live and three dead larvae from the surface debris bolls.

Aphids and bollworms had caused the most damage to cotton of any cotton pests in the Lower Rio Grande Valley of Texas. The aphid infestation was mostly along the river in the eastern area. Thrips control was required in a few cotton fields. Some cutworm and darkling beetle damage to young cotton was reported from the Mission, Texas, section. Cutworm damage to young cotton ranged from light to severe in Zavala county, Texas.

### FRUIT INSECTS

By the latter part of March, aphid hatch had been reported from several widely separated states. Hatching was reported as early as March 15 in Jefferson and Berkeley counties, West Virginia. First aphid eggs hatched in opening apple buds at Centralia, Illinois, March 19. In the Vincennes, Indiana, area overwintering eggs were more abundant than usual and by late March some hatching and feeding was underway. Hatching was also underway in apple orchards

in Virginia, Maryland, Delaware and Pennsylvania. In Orange county, New York, hatching of the apple aphid was observed April 1.

The first red-banded leaf roller egg mass of the season in the Vincennes, Indiana, area was found March 25.

## CEREAL AND FORAGE INSECTS

Among the cereal and forage insects, the pea aphid which was very prominent last year is again becoming active. In the Yuma, Arizona, area during early April, the pea aphid was more numerous than the spotted alfalfa aphid in several fields. Some reduction in growth was noted.

Pea aphids were present in legumes over Louisiana with rapid increase noted in the northwest and northeastern areas. The insect was reported present in southern Missouri but hard rains had reduced populations. Maryland, Virginia, Delaware, Georgia, Texas and Kansas also reported the pest present in varying degrees.

Both the alfalfa weevil and clover leaf weevil were becoming active during late March and early April. The alfalfa weevil was reported for the first time from several North Carolina counties. The pest is now known to be to the South Carolina border. Damage was moderate to severe in Moore county, North Carolina, with many fields in various counties needing immediate protection to save the first cutting. Virginia, Maryland and Delaware, in the east, also reported activity. In the western part of the country, spraying was necessary for the pest in Utah. Egg laying was heavy in untreated alfalfa fields of Washoe county, Nevada, and adults were reported from Ada, Canyon and Owyhee counties, Idaho. The clover leaf weevil was reported from Oklahoma, Missouri, Illinois, Indiana, Virginia, Maryland and Pennsylvania. Reports on greenbug have shown light infestations generally in the winter wheat area; however, 1,000 acres were treated in San Saba county, Texas.

## CHEMICALS

### USDA LABEL ACCEPTANCE GRANTED CRAG MYLONE

Crag Mylone, a new soil fumigant, has been granted label acceptance by USDA for use as a pre-planting control of weeds, nematodes and soil fungi in ornamental propagating beds.

The chemical, manufactured by Carbide and Carbon Chemicals Co., a division of Union Carbide and Carbon Corp., is also being used experimentally in many different states on tobacco, vegetable and forest-tree seed beds, and on turf.

### TOXAPHENE LABELED FOR CABBAGE & LETTUCE

Federal label registration for the use of toxaphene insecticides on lettuce and cabbage has been received by the Agricultural Chemicals Div. of Hercules Powder Co. USDA accepted the following label directions for treating lettuce and cabbage crops with toxaphene:

On head lettuce, directions call for a seven-day preharvest interval after application of toxaphene, along with instructions for removal of outer leaves at harvest.

On cabbage, treatment before harvest is modified. USDA accepted label directions subject to a warning that no toxaphene application should be made on cabbage within seven days of harvest.

### MINNESOTA REPORTS ON HERBICIDE TESTS

Three new herbicides, "butyrics," Simazin and CDAA, have brought promising results in tests at the University of Minnesota, according to R. S. Dunham, University agronomist.

"Butyrics" actually include two different kinds—the 2,4-D butyric and the MCP butyric. So far, it isn't known how butyrics affect all crops and weeds, but it is known that they aren't as harmful to clover as 2,4-D, the University reported.

Simazin has given satisfactory weed control in corn, in both pre-emergence and post-emergence

applications. At rates necessary for weed control, it hasn't caused any damage to corn. It also gives complete vegetation control if perennial grasses aren't a problem.

CDAA was reported particularly successful as a pre-emergence treatment on grass weeds in soybeans and corn. Tests in 1956 show that it is one of the most effective chemicals presently available for controlling wild oats, Dunham says.

No tests have been conducted at the University on whether these chemicals leave a residue on crops.

### MONTROSE OFFERS NEW REPELLENT MATERIAL

Montrose Chemical Co. now is offering the new insect repellent material, diethyl toluamide (DET), developed by USDA. DET was described by USDA as "the best all-purpose insect repellent so far developed" and has released it for commercial use. It offers protection against misquitos, ticks, chiggers, fleas and biting flies.

Montrose is putting on the market a high concentration meta isomer of diethyl toluamide to formulators of insect repellent lotions and similar preparations. More information is available.

CIRCLE 156 ON SERVICE CARD

### ACETO CHEMICAL MARKETS THIRAM

Availability of a pure (99½ per cent) micronized Thiram has been announced by Aceto Chemical Co., Inc.

The material is known chemically as tetramethyl thiuram disulfide. Its high purity and activity, plus its micronized particle size, make it an unusually effective fungicide, Aceto reports. For details,

CIRCLE 157 ON SERVICE CARD

### UREA PRICE UPPED

Nitrogen Division, Allied Chemical & Dye Corp., on April 1 increased the price of all solid urea products for agriculture \$5 per net ton product, on both f.o.b. and freight allowed shipments. All other conditions of sale remain the same, the division reported.

FARM CHEMICALS

by Dr. Melvin Nord

# PATENT REVIEWS

## SOIL CONDITIONERS

**U. S. 2,773,330**, issued Dec. 11, 1956 to Richard C. Erwin and assigned to Stauffer Chemical Co., discloses a soil conditioner which consists of a combination of ferric sulfate and calcium carbonate. Although these substances react to form gypsum, an entirely different result is obtained. Although it contains ferric sulfate, the soil conditioner is completely non-irritating to the user.

## PREVENTING CHLOROSIS

**U. S. 2,772,151**, issued Nov. 27, 1956 to Alexander A. Nikitin, assigned to Tennessee Corp., describes a method of preventing chlorosis (loss of chlorophyll and consequent yellowing of foliage) caused by iron deficiency.

According to the inventor, iron deficiency is the most difficult of all trace elements to correct. Soil treatment and spraying with ordinary iron salts and iron chelates proved ineffective, in tests conducted by the inventor. However, when ferrous oxalate is applied to the plant or to the soil, chlorotic conditions were very rapidly eliminated, whether the soil was acid or alkaline. The inventor also states that ferrous oxalate acts as a buffer against any toxic effects of excessive quantities of manganese which may be present in the soil.

## HERBICIDES

**U. S. 2,773,331**, issued Dec. 11, 1956 to William J. Hughes and assigned to Shell Development Co., describes a group of herbicides which are useful for pre-planting sterilization of the soil. The herbicides contain allyl alcohol and certain bromine-substituted olefins.


**U. S. 2,773,757**, issued Dec. 11, 1956 to George A. Connell and Eldon L. Paddock, assigned to United States Borax & Chemical Corp., describes a method of distributing sodium borate for weed-

control. Granular sodium borate is suspended in an aqueous suspension by means of a stabilizing agent such as Wyoming bentonite, granular calcium borate, or granular sodium-calcium borate.

**U. S. 2,773,758**, issued Dec. 11, 1956 to Arthur H. Schlesinger and assigned to Monsanto Chemical Co. describes an herbicidal composition consisting of an oil-in-water emulsion of chlorine-substituted 3-acetylphenyl.

**U. S. 2,774,658**, issued Dec. 18, 1956 to William T. Dye, Jr., and assigned to Monsanto Chemical Co., discloses a group of herbicidal alkyl-amino-phosphonium halides.

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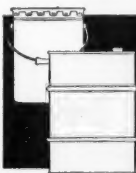
Complete line Steel PAILS and DRUMS—sizes 1 through 22 gallons. Open-Head, Closed-Head—all popular Pouring Spouts. Proven-in-use Hi-Bake Lining when specified.

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## FERTILIZERS

**U. S. 2,772,775**, issued Dec. 4, 1956 to George E. Atwood and assigned to International Minerals & Chemical Corp., relates to the decrepitation of sylvanite-containing ores by heating above 180° C., thus unlocking the potash values without the production of fines.

**U. S. 2,773,736**, issued Dec. 11, 1956 to Clinton A. Hollingsworth and assigned to Smith-Douglass Co., Inc., describes a process for the treatment of phosphate rock to recover phosphorus, fluorine, calcium, and uranium.

**U. S. 2,773,753**, issued Dec. 11, 1956 to Leonard A. Stengel and assigned to Commercial Solvents Corp., describes a process for the production of solid ammonium nitrate of any desired particle size. The invention makes it possible to produce much larger particles than usual, thus avoiding the formation of a wet mush in humid weather.

In essence, the method consists

of flowing molten ammonium nitrate onto a moving, flat endless belt on which cooling is effected, thus producing a sheet of solid ammonium nitrate. The sheet may then be broken up into particles of any desired size.

## PESTICIDES

**U. S. 2,772,260-4**, issued Nov. 27, 1956 to Charles C. Yeager and assigned to Scientific Oil Compounding Co., Inc., are a series of patents disclosing fungicidal compositions consisting of the reaction products of a complex metal amine salt of a rosin amine and a water-soluble carboxylic acid soap.

**U. S. 2,773,796**, issued Dec. 11, 1956 to Johannes T. Hackmann and Gerarda F. E. M. Dierick, assigned to Shell Development Co., describes a method of protecting plants from fungi by applying hydrazine salts of inorganic phosphorous acids. These salts have high fungitoxicity and low phytotoxicity, and are also suitable for treating against parasites and pests such as insects and bacteria.

**U. S. 2,773,799**, issued Dec. 11, 1956 to Hsing Yun Fan and assigned to Shell Development Co., discloses a series of fungicidal compositions of polyhalogeno alkyl polycyclyl ketones. These compounds have high toxicity towards fungi and other microorganisms, but not towards mammals.

**U. S. 2,774,706**, issued Dec. 18, 1956 to Johannes T. Hackmann and Willem A. Pel, assigned to Shell Development Corp., discloses a group of fungicidal compositions consisting of S-hydrocarbyl isothiurea salts.

**U. S. 2,775,066**, issued Dec. 25, 1956 to Lloyd J. Meuli and assigned to The Dow Chemical Co. describes the use of 1-buten-3-one and 1-penten-3-one as fungicidal compositions.

**U. S. 2,775,067**, issued Dec. 25, 1956 to Lloyd J. Meuli and assigned to The Dow Chemical Co. describes the use of halobutanedione compositions as fungicides.

# Production — January, 1957

Compiled from Government Sources

Chemical	Unit	January		December
		1957	1956	1956
Ammonia, synth. (anhydrous)	s. tons	302,504	279,055	290,512
Ammonia liquor, coal & coke (NH <sub>3</sub> content)	pounds	3,303,256	3,187,632	3,225,048
Ammonium nitrate, fert. grade (100% NH <sub>4</sub> NO <sub>3</sub> )	s. tons	172,198	177,150	170,628
Ammonium sulfate				
synthetic (technical)	s. tons	183,783	95,387	71,700
coke oven by-product (incl. amm. thiocyanate)	pounds	161,660,987	169,467,526	166,520,040
BHC (Hexachlorocyclohexane)	pounds	7,836,225	6,293,746	6,759,526
Gamma content	pounds	1,236,403	1,095,157	1,220,124
Calcium arsenate (commercial)	s. tons	749	2	2
Copper sulfate (gross)	s. tons	5,704		
DDT	pounds	10,878,405	11,592,197	11,200,942
2,4-D Acid	pounds	3,042,246	2,761,627	3,089,429
esters and salts	pounds	2,427,334	1,405,005	*1,246,540
esters and salts (acid equiv.)	pounds	1,758,410	1,098,889	*875,628
Lead arsenic (acid and basic)	s. tons	1,095	1,256	333
Phosphoric acid (50% H <sub>3</sub> PO <sub>4</sub> )	s. tons	337,493	329,101	275,711
Sulfur, native (Frasch)	l. tons	495,353	531,330	534,088
Recovered	l. tons	42,154	40,900	43,750
Sulfuric acid, gross (100% H <sub>2</sub> SO <sub>4</sub> )	s. tons	1,387,266	1,457,150	*1,339,401
Superphosphate (100% APA)	s. tons	220,497	253,904	*208,016
Normal and enriched (100% APA)	s. tons	138,442	157,315	*127,633
Concentrated (100% APA)	s. tons	65,484	77,793	61,115
Other phos. fertilizers (incl. wet-base goods)	s. tons	16,591	18,796	*17,819
2,4,5-T Acid	pounds	286,064	408,070	522,729
Urea	pounds	84,360,000	71,908,760	86,571,820

\* Revised. <sup>1</sup> Includes quantities for plant previously not reporting. <sup>2</sup> Withheld to avoid disclosing figures for individual establishments. <sup>3</sup> Excludes data for enriched grades. <sup>4</sup> Excludes data for wet-base goods. <sup>5</sup> Partly estimated.



# STATISTICS

## SUPER SHIPMENTS UP

Shipments of superphosphate and other phosphatic fertilizers during January totaled 158,988 tons, an increase of 17 per cent from the volume shipped the previous month, the Bureau of the Census reports.

Stocks held by producing plants on January 31 totaled 415,459 tons, approximately the same as those reported as of Dec. 31, 1956 and 1 per cent lower than January 31, 1956.

## COPPER SULFATE OUTPUT SHIPMENTS DOWN IN '56

Last year the copper sulfate producing industry in this country operated at reduced rates,

according to the Bureau of Mines. Production and shipments decreased 14 and 15 per cent, respectively. Stocks dropped 16 per cent and were the lowest since 1950.

Of total shipments, 21 per cent was for agricultural uses, compared with 23 per cent in 1955, 33 per cent for industrial (27 in 1955) and 46 per cent for other, chiefly for exports (50 in 1955).

## MO. FERT. SHIPMENTS INCREASED IN '56

Tonnage of both mixed fertilizers and fertilizer materials shipped for use in Missouri in 1956 amounted to 785,949, an increase over the 771,556 tons shipped the preceding year.

Mixed fertilizer shipments in-

creased 4,654 tons, reaching 454,525 tons, and materials shipments of 126,344 tons were 109,270 tons higher than in 1955.

## FERT. SALES IN '56 DECREASE IN W. VA.

Farmers and other users in West Virginia purchased 82,100 tons of commercial fertilizers and fertilizer materials during 1956, according to J. T. Johnson, Commissioner of Agriculture.

Compared to 1955, sales were down 4 per cent in the first six months of the year and 13 per cent during the last half.

Based on average prices paid by West Virginia farmers during 1956, the fertilizer sold cost purchasers about 4.3 million dollars, as compared to 4.6 million in 1955.

# POTASH REPORT FOR 1956

## Deliveries Down for Year but Increase During 4th Quarter

Potash deliveries in North America by the seven leading American potash producers and the importers during 1956 amounted to 3,932,527 tons of

salts (2,307,961 tons  $K_2O$ ), according to the American Potash Institute. This was an increase of 103,370 tons  $K_2O$  or less than 5 per cent over 1955.

## POTASH DELIVERIES

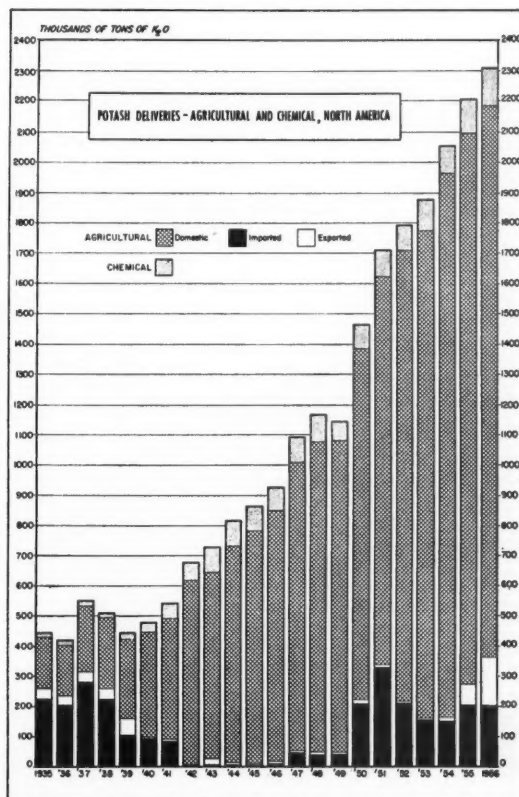
Short Tons  $K_2O$

	1956	1955	Oct.-Dec. '56	Oct.-Dec. '55
Agricultural				
United States				
Muriate.....	1,742,977	1,759,097	470,727	468,053
Manure Salts...	2,466	1,226	848	220
Sulphate and Sul. Pot.-Mag..	127,261	118,266*	52,699	37,506
Total.....	1,872,704	1,878,589*	524,274	505,779
(Imports)**.....	(165,630)	(160,034)*	(91,260)	(94,037)
Canada.....	89,280	88,600	44,023	40,882
(European Imports)**.....	(34,531)	(41,228)	(28,632)	(31,741)
Cuba.....	14,647	10,687	4,115	5,485
(Imports)**.....	(1,550)	(—)	(1,550)	(—)
Puerto Rico....	20,192	21,934*	4,812	4,167
(Imports)**.....	(3,123)	(5,558)*	(1,261)	(2,773)
Hawaii.....	23,358	18,159	3,926	3,731
Total Institute Territories.....	2,020,181	2,017,969*	581,150	560,044
Other Exports..	162,871	72,407	55,320	10,451
TOTAL AGRI-CULTURAL.....	2,183,052	2,090,376*	636,470	570,495
(Imports)**.....	(204,834)	(206,820)*	(122,703)	(128,551)

\* — Revised.

\*\* Import figures given in parentheses are included in all totals.

Deliveries for agricultural purposes in the continental United States for 1956 were 1,872,704 tons  $K_2O$ , a decrease of 5,885 tons under 1955. Muriate of potash continued to be by far the most popular material, comprising over 92 per cent of total  $K_2O$  delivered for agricultural purposes.



# FERTILIZER MATERIALS MARKET

## New York

April 20, 1957

**Sulfate of Ammonia.** Recently some large shipments of sulfate of ammonia were made for export to the Far East with the result that most producers find themselves in a comfortable supply position for the first time in several months. With the peak of the domestic season approaching, their ideas of price have firmed up somewhat.

**Ammonium Nitrate.** With sulfate of ammonia in a better supply position, producers of ammonium nitrate look for a better demand for their product over the next 60 days.

**Urea.** There were some reports that urea for quick shipment was a little hard to locate and the market is in a firm position. Large quantities are being used for industrial purposes such as plastics.

**Nitrogenous Tankage.** Some spot orders were received recently as buyers filled out their season's requirements. There was a tendency in some sections to use more high organic fertilizers, which helped the sale of nitrogenous tankage. No change in prices was noted and the market was still quoted \$3 to \$4 per unit of ammonia (\$3.64 to \$4.86 per unit N) f.o.b. production points.

**Castor Pomace.** With one producer shut down, a limited tonnage of this material was sold at \$45.50 per ton, f.o.b. production point, but as the production is very uncertain, supplies are very limited.

**Organics.** There was some demand for organic fertilizer materials for quick shipment as stocks on hand at buyer's plant were depleted. Last sale of dried blood were made at \$5.25 per unit of ammonia (\$6.38 per unit N) f.o.b. Eastern production points and tankage sold at \$5 per unit of ammonia (\$6.08 per unit N) f.o.b. New York. Soybean meal has been weak recently and

was reported sold as low as \$43 per ton in bulk, f.o.b. Decatur, Ill. Linseed meal firmed up about \$1 per ton because some plants stopped crushing linseed. Cottonseed meal was steady in price at about \$56 per ton, f.o.b. Memphis, Tenn., with demand limited.

**Fish Meal.** Little activity was reported in fish meal because of price and most buyers sought cheaper materials to replace fish meal in their mixtures. Demand from feed trade was limited. Fishing operations along the North Atlantic coast are expected to start within 30 days but from best reports available most plants have a carry-over from last season with last sales at about \$140 per ton, f.o.b. fish factories.

**Bone Meal.** A good demand was reported for both fertilizer and feed grade bone meal with last sales made on the basis of \$60 to \$65 at production points and as high as \$75 per ton at Southern shipping points.

**Hoof Meal.** Last sales made on the basis of \$5.75 per unit of ammonia (\$6.99 per unit N) f.o.b. Chicago and demand limited mostly for industrial use.

**Superphosphate.** Stocks are ample at all points and buyers are taking delivery against contracts. Some small price increases are looked for soon because of higher operating costs.

**Potash.** While a better movement was noted in potash recently, most producers still find shipments behind last season and are hoping that the next 30 days will see a good pickup in shipments. Very little imported material arrived in the last month.

## Philadelphia

April 20, 1957

Expected improvement in the movement of fertilizer materials has been delayed by bad weather. When this clears, we can look for quickly revived activity. Some manufacturers are predicting an increase in sales of fertilizer this

year. The recent storms are felt to have been decidedly helpful to the middle-west farmers.

**Sulfate of Ammonia.** The previous large stocks of this material have been so greatly reduced that the goods are now in a somewhat tight supply position. While this is probably the result of enormous export business, the domestic demand is reported much improved.

**Ammonium Nitrate.** Movement is somewhat improved, but production and inventories continue heavy. With the approach of better weather, the demand is expected to pick up.

**Nitrate of Soda.** The market situation in this material remains about the same as previously reported. Supplies are sufficient to meet all current requirements, and prices remain without change.

**Urea.** There is nothing new to report in this since the recent price advance of \$5 per ton. Situation is normal.

**Blood, Tankage, Bone.** Recent bad weather has kept the market in these articles inactive. Prices have changed only slightly since our last report. Blood is quoted at \$5.25 per unit ammonia (\$6.38 per unit N) in the New York area, and \$6 (\$7.29 per unit N) Chicago area. Tankage remains as heretofore, at \$5 (\$6.08 per unit N) New York and \$6 per unit (\$7.29 per unit N) at Chicago. Steamed bone remains at about \$60 per ton, with the feeding grade at \$72 per ton. General movement continues to lag.

**Fish Scrap.** This market is exceedingly quiet and quotations remain at \$137 per ton for scrap and \$140 for menhaden meal.

**Superphosphate.** Supplies are quite plentiful and normal grade is listed at 90 cents to 93 cents per unit a.p.a. per ton.

**Potash.** Movement is more or less normal with no price changes. Muriate remains listed at 36 cents to 38 cents per unit  $K_2O$  per ton.



Dr. Russell Coleman admires trophy

## **NPFI WINS NATIONAL PR AWARD**

**T**HE National Plant Food Institute received the American Public Relations Association's Silver Anvil Trophy in the field of agriculture, the highest honor in the field of public relations.

Dr. Russell Coleman, Executive Vice President of the Institute, accepted the award at the Annual Awards Dinner of the American Public Relations Association as the climax of its Thirteenth National Conference, at the Hotel Warwick, in Philadelphia, on April 26.

Seventeen Silver Anvil Trophies were presented "for the most outstanding public relations achievement programs of firms and organizations in eighteen classifications."

The entry of the National Plant Food Institute in the Association's Thirteenth Annual Awards Competition featured an extensive program of cooperation between bankers, land-grant colleges, and the Institute in their mutual concern for the problems of maintaining, replenishing, and increasing the fertility of the nation's soils.

The objectives of the cooperative projects in the program that won for the Institute the Silver Anvil Trophy were:

1. To familiarize bankers with the economic advantages of the soil fertility practices recommended by state colleges of agriculture;
2. To familiarize bankers with the steps necessary to be taken by farmers to avail themselves of the assistance offered by state colleges of agriculture, particularly soil testing services and fertilizer recommendations based thereon;
3. To bring about closer working relationships between bankers and banker groups and those personnel of the land-grant colleges who are concerned with soil fertility practices;
4. To increase interest both on the part of the banks and key college personnel in the economic aspects of proper fertilizer use.

Dr. Coleman paid tribute to the banking and land-grant college leaders in the twenty states cooperating in the projects which won the award.

"Many individuals and organizations too numerous to list have assisted in these projects which have resulted in the recognition given the Institute," Dr. Coleman said, "Projects involved in the Institute's entry could only have been successful because of the tremendous interest and efforts on behalf of agriculture by the respective bankers' associations and the land-grant college personnel."

MAY, 1957

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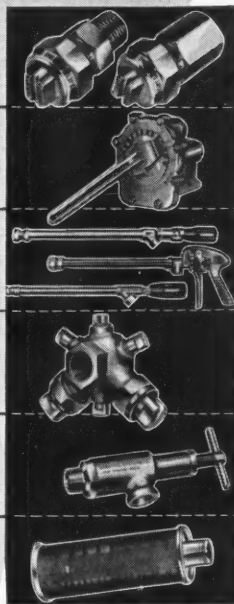
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American Cyanamid Co., New York City

## MANGANESE SULFATE

Tennessee Corp., Atlanta, Ga.

## MANURE SALTS

Potash Co. of America, Washington, D. C.

## METHOXYCHLOR

Geigy Agr. Chems., Div. Geigy Chem. Corp., N.Y.C.

## MINOR ELEMENTS

Geigy Agr. Chems., Div. Geigy Chem. Corp., N.Y.C.  
Tennessee Corporation, Atlanta, Ga.

## MIXERS

Blue Valley Equipmt. Mfg. & Eng. Co., Topeka, Kans.  
Munson Mill Mach. Co., Utica, N. Y.  
Rapids Machinery Co., Marion, Iowa  
Stedman Foundry and Machine Co., Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

## NITRATE OF SODA

American Agricultural Chemical Co., N. Y. C.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.  
International Min. & Chem. Corp., Chicago, Ill.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## NITROGEN SOLUTIONS

American Cyanamid Co., New York City  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Commercial Solvents Corporation, New York City  
Escambia Chem. Corp., Pensacola, Fla.  
Lion Oil Company, El Dorado, Ark.  
Mississippi River Chem. Co., St. Louis, Mo.  
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.  
Phillips Chemical Co., Bartlesville, Okla.  
Sinclair Chemicals, Chicago, Ill.  
Sohio Chemical Co., Lima, O.

## NITROGEN MATERIALS—Organic

American Agricultural Chemical Co., N. Y. C.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
International Min. & Chem. Corp., Chicago, Ill.  
Jackle, Frank R., New York City  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## NOZZLES—Spray

Monarch Mfg. Works, Philadelphia, Pa.  
Spraying Systems Co., Bellwood, Ill.

## PAILS—STEEL

Vulcan Steel Container Co., Birmingham, Ala.

## PARATHION

American Cyanamid Co., New York City  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Monsanto Chem. Co., St. Louis, Mo.

## PHOSPHATE ROCK

American Cyanamid Co., New York City  
American Agricultural Chemical Co., N. Y. C.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
International Min. & Chem. Corp., Chicago, Ill.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## PHOSPHORIC ACID

American Agricultural Chemical Co., N. Y. C.

## PLANT CONSTRUCTION—Fertilizer and Acid

Blue Valley Equipmt. Mfg. & Eng. Co., Topeka, Kans.  
Link-Belt Co., Chicago, Ill.  
Stedman Foundry and Machine Co., Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

## POTASH—Muriate

American Potash & Chemical Corp., Los Angeles, California  
Ashcraft-Wilkinson Co., (Duval Potash) Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
Duval Sulphur & Potash Co., Houston, Tex.  
International Min. & Chem. Corp., Chicago, Ill.  
National Potash Co., N. Y. C.  
Potash Co. of America, Washington, D. C.  
Southwest Potash Corp., New York City  
United States Potash Co., N. Y. C.

## POTASH—Sulfate

American Potash & Chemical Corp., Los Angeles, California  
International Min. & Chem. Corp., Chicago, Ill.  
Potash Co. of America, Washington, D. C.

## PRINTING PRESSES—Bag

Schmutz Mfg. Co., Louisville, Ky.

## PYROPHYLLITE

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Pioneer Pyrophyllite Producers, Beverly Hills, Calif.

## REPAIR PARTS AND CASTINGS

Stedman Foundry and Machine Co., Aurora, Ind.

## SCALES—Including Automatic Baggers

Exact Weight Scale Co., Columbus, O.  
Stedman Foundry and Machine Co., Aurora, Ind.

## SCREENS

Blue Valley Equipmt. Mfg. & Eng. Co., Topeka, Kans.  
Finco Inc., North Aurora, Ill.  
Ludlow-Saylor Wire Cloth Co., St. Louis, Mo.  
Stedman Foundry and Machine Co., Aurora, Ind.  
Sturtevant Mill Co., Boston, Mass.

## SHOVEL LOADERS

Clark Equipmt. Co., Benton Harbor, Mich.  
Hough, The Frank G. Co., Libertyville, Ill.  
Tractomotive Corp., Deerfield, Ill.

## SOILTEST EQUIPMENT

The Edwards Laboratory, Norwalk, O.

## SPRAYERS

Finco, Inc., N. Aurora, Ill.

## SPRAYS

Monarch Mfg. Works, Inc., Philadelphia, Pa.  
Spraying Systems Co., Bellwood, Ill.  
Baughman Mfg. Co., Jerseyville, Ill.

## SPREADERS, TRUCK

Baughman Manufacturing Co., Jerseyville, Ill.  
Highway Equipment Co., Cedar Rapids, Ia.

## STORAGE TANKS

Cole, R. D., Manufacturing Co., Newnan, Ga.

## SULFATE OF AMMONIA

American Cyanamid Co., New York City  
American Agricultural Chemical Co., N. Y. C.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
Jackle, Frank R., New York City  
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.  
Phillips Chemical Co., Bartlesville, Okla.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## SULFATE OF POTASH—MAGNESIA

International Min. & Chem. Corp., Chicago, Ill.

## SULFUR

Ashcraft-Wilkinson Co., Atlanta, Ga.  
Texas Gulf Sulphur Co., New York City  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## SULFUR—Dusting & Spraying

Ashcraft-Wilkinson Co., Atlanta, Ga.  
U. S. Phosphoric Products Div., Tennessee Corp., Tampa, Fla.

## SULFURIC ACID

American Agricultural Chemical Co., N. Y. C.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
International Min. & Chem. Corp., Chicago, Ill.  
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.

## SUPERPHOSPHATE

American Agricultural Chemical Co., N. Y. C.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
Davison Chemical Co., div. of W. R. Grace & Co., Baltimore, Md.  
International Min. & Chem. Corp., Chicago, Ill.  
Jackle, Frank R., New York City  
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## SUPERPHOSPHATE—Concentrated

Armour Fertilizer Works, Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
International Min. & Chem. Corp., Chicago, Ill.  
Phillips Chemical Co., Bartlesville, Okla.  
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## TALC

Ashcraft-Wilkinson Co., Atlanta, Ga.

## TANKAGE

American Agricultural Chemical Co., N. Y. C.  
Armour Fertilizer Works, Atlanta, Ga.  
Ashcraft-Wilkinson Co., Atlanta, Ga.  
Bradley & Baker, N. Y. C.  
International Min. & Chem. Corp., Chicago, Ill.  
Jackle, Frank R., New York City  
Woodward & Dickerson, Inc., Philadelphia, Pa.

## TANKS—NH<sub>3</sub> and Liquid N

Cole, R. D., Manufacturing Co., Newnan, Ga.

## TOXAPHENE

Ashcraft-Wilkinson Co., Atlanta, Ga.

## TRUCKS—SPREADER

Baughman Mfg. Co., Jerseyville, Ill.  
Highway Equipment Co., Cedar Rapids, Ia.

## UREA & UREA PRODUCTS

Atkins, Kroll & Co., San Francisco, Calif.  
Bradley & Baker, N. Y. C.  
Grand River Chem. Div., Deere & Co., Tulsa, Okla.  
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.  
Sohio Chemical Co., Lima, O.

## UREA-FORM

Nitro-Form Agricultural Chemicals, Woonsocket, R. I.

## VALVES

Monarch Mfg. Works, Inc., Philadelphia, Pa.

## ZINC SULFATE

Tennessee Corp., Atlanta, Ga.

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